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# Gleanings in Bee Culture



One of the pleasures of a beekeeper's life is the trip home from an outyard after a hard day's work.—*Morley Pettit.*

We are now running 1000 Colonies for Queens and are prepared to accept orders for Queens in large quantities and make immediate delivery. Each Queen selected and prepared for mailing by our Queen-breeder personally. They are going out in every mail, and to have yours in time to use them this season better get your order in the next mail. Also let us have your list of supplies, so we can quote you our very best prices.



**MILLER BOX MANUFACTURING  
COMPANY**  
201 North Ave. 18.  
Los Angeles, California.

"Griggs saves you freight."

## TOLEDO

By the time you read this our 1921 crop will be history. How about your Honey Cans, Comb-honey Cases, Extractors? Let us know your wants. We can serve you promptly and well.

## Honey, New Crop

Send sample and say how much you have, kind, how packed, and price asked in first letter.

Beeswax always wanted.

**THE GRIGGS BROS. CO.**

Dept. 25

Toledo, O.

"Griggs saves you freight."



## The Old Reliable Three-Banded Italians



Booking orders now for 1921. Queens ready April 1st. My Italians are of an exceptionally vigorous and long-lived stock strain of bees. They are gentle, prolific, very resistant to foul brood, and the best of honey-gatherers. I have sold a good many queens to parties who are using them in stamping out foul brood. Orders booked for one-fourth cash, balance before delivery. Will guarantee safe arrival in the United States and Canada. Descriptive circular and price list free.

Prices April, May, and June				July to November		
	1	6	12	1	6	12
Untested . . . . .	\$1.50	\$8.00	\$15.00	\$1.25	\$6.50	\$12.50
Select Untested. .	1.75	9.00	16.00	1.50	8.00	15.00
Tested . . . . .	2.50	12.50	24.00	2.25	12.00	22.00
Select Tested . .	3.00 each			\$3.00 each		

No nuclei or pound packages of bees for sale.

**JOHN G. MILLER**

723 C Street  
Corpus Christi, Texas

## Further Reduction

In order to further reduce our stocks before taking inventory July 31, we are making a reduction of 10% from latest prices on frames, hives, supers, foundation, honey extractors, and other Eastern goods.


Buy now and save money!

**THE A. I. ROOT COMPANY OF CALIFORNIA**

Los Angeles: 1824 E. 15th St.

San Francisco: 52-54 Main St.





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#### Editorial Staff

Geo. S. Demuth and E. R. Root  
Editors

A. I. Root  
Editor Home Dept.

Iona Fowls  
Assistant Editor

H. G. Rowe  
M'n'g Editor

YOU KNOW THIS IS THE  
BEST VEIL.  
Don't Do Without.



\$1.50 will bring this veil to you direct from us or any of the G. B. Lewis distributors. We give you this GUARANTEE: If, after you receive your Ideal bee-veil, it is not the best veil you ever hope to own, return it and your money will be returned to you and we will still be good friends. Buy an extra one for your wife; she deserves the BEST and it will make her happy.

## AFTER ALL IS SAID AND DONE

You, I, and the next fellow will be better off and happier when prices in all commodities seek the same level. When a pound of honey bought a loaf of bread, we were happy. Even though the loaf cost 15c it did not anger us because honey advanced to the same level. Let us not judge the present conditions as "unfair"; we are simply returning to the price of bread we used to know. The other prices will eventually seek the same level.

Send for our REDUCED prices on Bee Supplies. Our reduction is as much as  $\frac{1}{3}$  off of 1921 prices.

We expect to buy a limited quantity of honey during the summer months. Send a sample and tell us what you want for it. If we can get together, your check will follow the day your shipment is received.

Old Combs and Cappings rendered into wax. Bag or box it, address to us, and mark the Bill of Lading, "Wax Refuse"; this takes the lowest freight rate. We pay market price for the wax less 5c per pound rendering charges. Do it before the "wax moths" do it for you.

**THE FRED W. MUTH CO.**

Pearl and Walnut Sts.

Cincinnati, Ohio

## "SUPERIOR" FOUNDATION

Yes, we are ready for the rush. Many tons now ready for shipment, and our machines are running to utmost capacity. Use the best. If your dealer can't supply you, write us for price, stating quantity required. We also accept beeswax for foundation or supplies.

"Everything in Bee Supplies"

**SUPERIOR HONEY COMPANY**

OGDEN, UTAH.

(Manufacturers of Wed Process Foundation)

## Indianapolis Can Give You Some Real Beekeeping Service

We ship your order the same day it is received. Let us give you some of this service. Catalog for the asking. Write for prices on beeswax.

**THE A. I. ROOT COMPANY**

873 Massachusetts Avenue, Indianapolis, Ind.

**A Superior Quality  
At Less Cost**

# SUPPLIES

**A Superior Quality  
At Less Cost**

## A 15 Per Cent Reduction in Prices

Our campaign to secure lower prices on supplies has been successful. Our beekeeper friends have been writing us complaining bitterly of the high prices of supplies charged by most supply manufacturers. Knowing their attitude to be right we have made continuous efforts to get the prices of supplies down.

The Diamond Match Co., whose agents we are, now write us in regard to our efforts, "Remember that you have the assistance and help of the Diamond Match Co. solidly behind you, and that we are in the supply business to stay."

We are glad to pass on this good news and a 15% reduction to our beekeeper friends.

**Deduct the 15% from prices listed below, when ordering.**

Hives, Supers, etc., listed below are in the flat, and are complete with Hoffman frames, nails, metal rabbets, and all inside fixtures.

### One-story Dovetailed Hive

Five 8-frame .....\$16.00  
Five 10-frame ..... 16.90

### Full-Depth Supers

Five 8-frame .....\$8.00  
Five 10-frame ..... 9.00

### Shallow Extracting Supers

Five 8-frame .....\$6.00  
Five 10-frame ..... 6.50

### No. 1 Style Comb Honey Supers

Five 8-frame .....\$5.75  
Five 10-frame ..... 6.25

### Standard Hoffman Frames

100 ..... \$8.50  
500 ..... 40.00

### Shallow Extracting Frames

100 ..... \$6.70  
500 ..... 32.50

**Prices on Our Incomparable Quality Foundation are Net.**

#### Medium Brood

5 lbs...74c per lb.  
25 lbs...73c per lb.  
50 lbs...72c per lb.

#### Thin Super

5 lbs...80c per lb.  
25 lbs...79c per lb.  
50 lbs...78c per lb.

#### Light Brood

5-lb. lots 76c per lb.  
25-lb. lots 75c per lb.  
50-lb. lots 74c per lb.

Especially prepared Beehive White Paint, one-half gallon cans, \$2.10.

# Hoffman & Hauck, Inc.

Woodhaven, New York



## HONEY MARKETS

Just as we go to press (June 22) there are reports of some large deals in honey in California. The shortage of crop there is doubtless responsible for this activity—to get sage and orange when they can be had.

There has been a fair to good crop of clover honey in Ohio and Michigan. The yield in the bordering states will not be quite as good on account of less rain.

The A. I. Root Company.

### U. S. Government Market Reports.

SHIPPING POINT INFORMATION FOR FIRST HALF OF JUNE.

CALIFORNIA, Los Angeles.—Supplies of white sage, light amber, and white orange light, other varieties heavy. Light wire inquiry. Movement very slow, market dull, little change in prices. Carloads f. o. b. usual terms at loading point, white orange, new crop 12-12½c; old crop, no sales reported; light amber alfalfa old crop 5½-6c, new 6-6½c; white sage best 12-12½c, light amber sage, no sales reported. Hawaiian, white 6c, light amber 5½c. Beeswax, in less than carlots, light 30-33c, dark 26-28c per lb. Alfalfa crop is now estimated normal, orange 25% and sage at 30% of normal.

INTERMOUNTAIN REGION, Idaho and Utah.—Shipments have been moderate, with little or no inquiry for carlots. The supplies in some sections are practically all sold. White sweet clover is reported at 7 to 8c for carloads f. o. b. usual terms at loading points; light honey is bringing 8c in l. c. l. lots. Comb No. 1 is selling in a small way direct to retailers at 6.50-7.00. Dealers are paying beekeepers for good quality light honey 7½c per lb. The bees are reported in fair condition; considerable quantities have been brought in from California.

CENTRAL AND MIDDLE WESTERN STATES.—The crop prospects in Wisconsin are fair, the alsike clover is good, and after that the basswood, which is now well set with buds, will be on. The honey flow has just started. No honey is reported moving. A few sales by beekeepers of beeswax are reported at 26c in cash and 29c in trade for best stock. In Ohio the bees are reported as working well, and prospects are good for a full crop. A few sales of extracted clover in small lots are reported at 15c per lb.

SOUTHEASTERN SECTION.—Shipments are very light, with practically no sales reported. Shippers are quoting extracted light amber at 55c per gal. The crop outlook is below normal, due to bad weather conditions. The hives are reported in good condition.

NORTHEASTERN SECTION.—Bees are reported in generally good condition, but some foul brood is noted. Considerable clover honey is now in the hives, with a new lot of white clover plants commencing to yield, and sweet clover starting to bloom.

TELEGRAPHIC REPORTS FROM IMPORTANT MARKETS

DENVER.—Market continues quiet. Demand and movement very light. Sales to jobbers, per lb., extracted: Colorado, white 11-13½c, light amber 10½-12½c, amber 10c. Comb: Colorado 24-section cases No. 1, white \$6.08; No. 2, \$5.63.

BOSTON.—No arrivals reported since last report. Very light movement in all lines with prices practically unchanged. Comb: Sales to retailers, New York, 24-section cases white clover No. 1, heavy \$8.50-9.00, light \$7.00-7.50; Vermont, 20-section cases white clover No. 1, 8.00-8.50; light, \$7.00-7.50. Extracted: Sales to confectioners and bottlers, Porto Rico, amber per gal. 80-85c; California, per lb. white sage, 15-16c; few small lots high as 18c. Brokers' nominal quotations in l. c. l. lots to dealers and bottlers delivered at Boston: California, per lb. white sage, 12c; light amber alfalfa, 9c; amber alfalfa, 7-8c. No sales of beeswax reported.

CHICAGO.—Arrivals since last report, 2 cars from New York, consisting African and Hawaiian and approximately 2,000 lbs. Minn., 1,500 lbs.,

Nev., 3,000 lbs. Ia., 5,000 lbs. Colo., 3,000 lbs. Calif. Market dull and prices irregular. Dealers who have merchandise stock trying to maintain prices, but commission stock is lowering prices and there is very little f. o. b. buying at present. Feeling for future rather pessimistic. Extracted: Sales to bottlers, Colorado, Utah, and California, per lb. light amber 8½-9½c. Comb: Sales to retailers, Minnesota, Iowa, and Nevada, 24-section cases alfalfa No. 1, best heavy, 6.50-7.00; light weight, discolored, \$5.00-6.00. Beeswax: Receipts moderate, market dull, trading slow. Sales to harness-makers, wholesale druggists, etc., Oklahoma, Montana, and Missouri, per lb.: light, 30-31c; dark, 28c; African, refined, 25c.

CINCINNATI.—1 car Utah arriver. On account of the refusal of the principal honey and beeswax receivers to furnish the information necessary to report market conditions and prices in Cincinnati accurately and completely, no report can be published for this important honey and beeswax center.

CLEVELAND.—No carlot arrivals. Practically no demand, movement slow, no change in prices. Dealers quote extracted: In 5-case lots or more per lb. western white sweet clover, 11-12c.

MINNEAPOLIS.—No carlot arrivals since last report. Extracted: Supplies light. Practically no demand, market weak, no sales reported.

KANSAS CITY.—No carlot arrivals since last report. Demand and movement moderate. Sales to jobbers, extracted: Supplies moderate, market slightly stronger. Per lb., Utah, extra light amber, 11c. Comb: Supplies light, market steady. Colorado, 24-section cases No. 1 white, \$6.00-6.50.

NEW YORK.—Domestic l. c. l. receipts light. South American and West Indian receipts limited. Supplies moderate. Demand and movement light, market dull, few sales. Extracted: Sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb. California, light amber alfalfa, 8-9c; white orange blossom and white sage, 12-13c. West Indian and South American, refined, best mostly 5½-6c per lb.; or 55-60c, few, 65c per gal. Comb: No supplies. Beeswax: Foreign receipts limited. Supplies moderate. Demand and movement light, market dull. Spot sales to wholesalers, manufacturers, bleachers and drug trade, per lb. South American, crude light, 26-28c; slightly darker, 24-26c; dark, 16-18c; African, dark, 16-18c.

PHILADELPHIA.—Practically no demand or movement, market very dull on account of low prices of sugar. Bulk per barrel, very few sales to bakers, extracted: Per gal., Porto Rican, amber, 57c; San Domingo Mexican, light amber, quoted 60-65c, no sales. Beeswax: Practically no demand, market dull. Sales to manufacturers, per lb. South American, 26-28c; African, dark, 17c.

ST. LOUIS.—Comb: No receipts reported. Practically no demand, market very weak. No actual or nominal market established. Extracted: No receipts of new honey reported as yet. Supplies of old stock liberal. The market is weak. No sales made to establish any prices. Beeswax: Very light receipts and light supplies. Demand good, but movement limited on account of supply. Floor wax and other manufacturers reported to be on the market for stocks. Sales to jobbers, per lb. southern, ungraded average country run wax, market is firm at around 25c.

GEORGE LIVINGSTON

Chief of Bureau of Markets.

### Special Foreign Quotations.

LIVERPOOL.—During the past month there has been a fair demand for Chilean honey for export. There have been about 700 barrels sold. There are inquiries for Cuban and West Indian honey but no offers. The value of extracted honey in American currency is about 8c per lb. The value of beeswax at today's rate of exchange is about 23 cents per lb. Taylor & Co.

Liverpool, England, June 2.

CUBA.—Honey today sells at 40c a gallon. Matanzas, Cuba, June 7. Adolfo Marzol.

### Opinions of Producers.

Early in June we sent to actual honey producers, scattered over the country, the following questions:



1. How does the honey flow in your locality compare with normal at this time? Give answer in per cent.
2. What is your estimate as to what the total crop will be for 1921 compared with normal, the estimate being based upon the yield to date as well as the present condition of the honey plants and the colonies. Give answer in per cent.
3. What percentage of last year's crop still remains in the hands of the producers?
4. At what price do you expect the new crop to move in large lots in your market? Comb honey? Extracted honey?

State.	Reported by	Honey Flow	Crop	On Hand	Price	Price Ext.
Ala.	J. M. Cutts....	80	90	25	\$ .20	
Ark.	J. V. Ormond....	100	100	0	.25	\$.22
Ark.	Jas. Johnson....	100	100	0	.27	
B. C.	W. J. Sheppard....	100	100	0	.35	.28
Cal.	L. L. Andrews....	20	25	30		.12
Cal.	G. B. Larianan....	8	15	20		
Cal.	M. A. Saylor....	90	100	0		
Colo.	J. H. Wagner....	100	150	25	6.00	.16
Colo.	B. W. Hopper....	90	90	5	5.00	.10
Conn.	A. Latham....	200	150	5	6.00	.20
Fla.	Ward Lamkin....	100	100	5		.10
Fla.	Harry Hewitt....	10	75	25		.11
Fla.	C. E. Cook....	75	75	5	.20	.15
Fla.	C. H. Clute....	5	60	0		
Ga.	J. J. Wilder....			20	.19	.14
Ida.	E. F. Atwater....		100		6.00	.12
Ill.	A. C. Baxter....	25	40	0	.30	.22
Ill.	C. F. Bender....	20	30	0		
Ill.	A. L. Kildow....	15	5	10	.25	.20
Ind.	T. C. Johnson....	70	100	0	6.00	.20
Ind.	E. S. Miller....	90	90	20	7.00	.17
Ia.	Ed. G. Brown....	100	100	2	.22	.12
Ia.	F. Coverdale....	10				
Kan.	J. A. Nininger....	75	50	0	7.00	.20
Kan.	C. D. Mize....	100	80	0	7.00	.15
Ky.	P. C. Ward....	70	75	0		
La.	E. C. Davis....	50	50	10		
Me.	O. B. Griffin....	25	5	5	.31	.28
Mass.	O. M. Smith....	50	50	5		
Md.	S. J. Crocker, Jr....	25	25		.25	.15
Mich.	B. F. Kindig....	100	100	7		
Mich.	F. Markham....	100	75	25	.30	.15
Minn.	C. Blaker....	75	75	25		
Miss.	W. Elam....	50	65	10		.12
Miss.	R. B. Willson....	85	80	2	.30	.11
Mont.	R. E. Bray....	95	95	10	5.00	.16
Neb.	F. J. Harris....			9		
N. H.	W. H. Wolff....	100	100	0	8.00	.20
Nev.	L. D. A. Prince....	0	50	10	5.00	.12
Nev.	E. G. Norton....			5		.10
N. J.	E. G. Carr....	50	75	5		
N. Y.	Geo. B. Howe....	10		0		
N. Y.	Adams & Myers....				.23	.13
N. Y.	Geo. H. Rea....	50	50			
N. Y.	O. J. Spahn....	50	50		.30	.20
N. Y.	N. L. Stevens....	50	75	15	.18	.10
N. Y.	F. W. Lesser....	75	50	0	5.00	.11
Ohio	E. G. Baldwin....	85	75	8	.17	.13
Ohio	F. Leininger....	100	100	0	.25	.15
Ohio	R. D. Hiatt....	100	85	0		
Ohio	W. A. Matheny....	10	10	0	.40	.40
Okla.	C. F. Stiles....	90		0		
Ore.	E. J. Ladd....	90	75	9	.21	.10
Penn.	Harry Beaver....	50	40	0		
R. I.	A. C. Miller....	40	100	0		
S. C.	A. S. Conradi....	50		0		
Tenn.	G. M. Bentley....	100	100	0	.30	.25
Tenn.	J. M. Buchanan....	90	100	0	.25	.20
Tex.	T. A. Bowden....	100	100	0	.26	.18
Tex.	J. N. Mayes....	50	50	0	.14	.10
Utah	M. A. Gill....	100	100	0	4.00	.09
Utah	N. E. Miller....	105	108			.08
Vt.	J. E. Crane....	80	10	0	.25	.15
Wash.	G. W. B. Saxton....	50	150	10		.15
Wash.	W. L. Cox....	100	100	0	.25	.15
Wash.	G. W. York....	105	75	5	5.00	.12
W. Va.	T. K. Massie....	0	0	0		
Wis.	N. E. France....		85	10		
Wis.	E. Hassinger....	80	60	2	.23	.13

#### THE HONEY SITUATION IN THE UNITED STATES.

Los Angeles, Calif., May 24.—It is only recently that the honey industry has become a specialized,

important industry in the United States. This development has taken place almost entirely in the State of California and is to a great extent the result of the activity of co-operative marketing associations.

Heretofore, statistics as to honey production and consumption in the United States have been almost negligible, because of the fact that the production of honey was maintained as a sideline by the average agriculturist. The development of the honey industry upon a scientific commercial basis has created the necessity for accurate information as to honey production, and for a careful scientific analysis of the honey situation. As a consequence, the Research Department of the First National Bank of Los Angeles and the Los Angeles Trust and Savings Bank has undertaken a careful study of the honey situation in the United States and the State of California. While it has been impossible to secure as detailed information as might be desired, because accurate statistics have not been maintained in the past, it has, nevertheless, proved possible to secure a considerable amount of accurate data with regard to the industry.

California produces approximately 15 per cent of the honey produced in the United States of America. Iowa is the second state, producing 6 per cent of the entire crop of the United States. New York, Illinois, Michigan, and Wisconsin each produce approximately 4 per cent, and Pennsylvania, Georgia, Florida, Ohio, Indiana, Missouri, and Colorado 3 per cent. No other state produces more than 2 per cent of the entire honey supply of the United States.

California alone markets the major proportion of its honey production outside of the State in which it is produced. As a general rule from 70 to 90 per cent of the commercial honey produced in California is marketed outside of the State and from one-third to one-half of the honey marketed outside of the State in which produced is California honey.

Careful estimates as to commercial honey production in California during the past twenty years are given below:

Year.	Pounds
1900	2,208,000
1901	8,112,000
1902	5,125,000
1903	8,400,000
1904	1,040,000
1905	10,000,000
1906	4,510,000
1907	7,120,000
1908	4,524,000
1909	11,532,000
1910	4,080,000
1911	9,500,000
1912	4,710,000
1913	3,720,000
1914	7,950,000
1915	9,360,000
1916	8,100,000
1917	6,500,000
1918	5,500,000
1919	6,350,000
1920 (not final)	9,500,000

It is impossible to secure accurate figures as to total honey produced in the United States of America. However, the Chief of the Field Service of the Department of Agriculture estimates that 180,000,000 pounds will approximate the total honey production in the United States during 1916 and states that it is his belief that these figures are within 10 per cent of the actual production. Upon this basis it is estimated that the total production for the United States was about 150,000,000 pounds in 1917, 180,000,000 pounds in 1918, 210,000,000 pounds in 1919 and 250,000,000 pounds in 1920. It may be, however, that the 1920 production of honey in the United States totaled as much as 300,000,000 pounds. This is the estimate made by Dr. E. F. Phillips, Apiculturist of the Bureau of Entomology.

Commercial honey is produced almost exclusively in the form of extracted or bulk honey, although there are three forms in which honey enters the commercial market. Next in importance to extracted honey is comb honey and there is a small amount of chunk honey sold upon the market. By chunk honey is meant that honey which is sold in the

(Continued on page 468.)

Buckeye Packed Hives	Queen Excluders
Bee Books	Queen Rearing Outfits
Bee Gloves	Honey Tanks
Section Honey Boxes	Standard Dovetailed Hives
Bee Veils	Honey Labels
Honey Extractors	Hive Parts
Feeders	Smokers
Bees	Comb Foundation, Airco Brand
Beginner's Outfits	Wax Presses
Gleanings in Bee Culture	Capping Melters
Frames	Queens

*"And they are all Root Quality"*



M. H. Hunt & Son

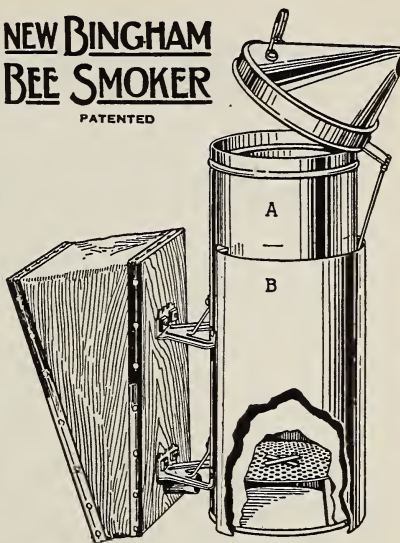
Lansing, Michigan  
510 North Cedar Street

*Send for 1921 Catalog.*

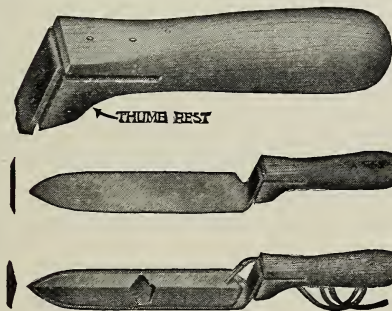
### Buy Bingham Bee Smokers

On the market over 40 years. The bellows of best quality sheepskin is provided with a valve, which gives it pep and makes it respond quickly to the most delicate touch, giving as much or as little smoke as is required. The Big Smoke size, stove 4 x 10 inches, with asbestos-lined shield, permits the holding of the smoker between the knees without danger of burning the trousers or one's legs. This size is much appreciated by extensive operators.

**NEW BINGHAM  
BEE SMOKER**  
PATENTED



Postage extra.	Size of stove, ins.	Shipping wt., lbs.
Big Smoke, with shield.....	4 x10	3
Big Smoke, no shield.....	4 x10	3
Smoke Engine .....	4 x7	2½
Doctor .....	3½ x7	2
Conqueror .....	3 x7	1¾
Little Wonder .....	3 x5½	1½



### Buy Bingham Honey Uncapping Knives

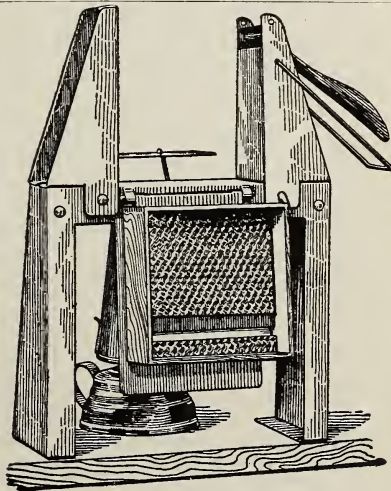
Made of the finest quality steel for the purpose that money can buy. These knives of the proper thickness and quality have given the best of satisfaction, as the old timers will testify. For over thirty years the men engaged in the manufacture of these knives have been at this work. The perfect grip cold handle is one of the improvements.

### Buy Woodman Section Fixer

A combined section press and foundation fastener of pressed steel construction. It forms comb-honey sections and puts in top and bottom starters all at one handling. Top and bottom starters insure combs attached to all four sides, a requirement to grade fancy. By using this machine you always handle large pieces of foundation. The difficulty of handling the small bottom starters is eliminated, which is not the case with other machines. The section comes away right side up, with the large starter hanging down, which is a decided advantage in rapid work, especially in hot weather.

#### SPECIAL SALE HONEY PACKAGES.

60-lb. cans, 2 in a case, per case in quantity lots, f. o. b. Chicago, at \$1.30; Detroit, at \$1.30; Baltimore, at \$1.25. Friction-top pails, f. o. b. Chicago, 5-lb. size, crates of 100 at \$7.75; crates of 203 at \$15.00; 10-lb. size, crates of 113 at \$12.50. F. o. b. Baltimore, 5-lb. size, crates of 100 at \$7.50; 10-lb. size, crates of 100, at \$11.00. Clear flint glass Mason jars with lacquered tin caps and wax liners, pints per gross at \$9.00, quarts per gross at \$10.00. Quotations on other packages made on request.



**A. G. Woodman Co., Grand Rapids, Mich., U. S. A.**



# NOW IS THE TIME

when every minute counts, for you as for your bees. You know, Mr. Beekeeper, the great saving of a drawn comb over a sheet of foundation.

Just so, there must be a saving, when the bees draw out foundation without hesitancy. **DADANT'S FOUNDATION** is such a product, so received by the bees.

Combs are drawn once for all. Make sure the foundation you furnish your bees insures as nearly perfect combs as is possible.

There is a satisfaction in driving a good horse or a good car. Just so with giving your bees a good foundation.

Remember, **Dadant's Foundation** is the result of years of patient experimentation combined with extensive use in our own apiaries.

We send out **no product** which has not proven its superiority by actual test in our many apiaries.

**DADANT'S FOUNDATION**—Every inch, every pound, every ton equal to any sample we have ever sent out. Specify it to your dealer. If he hasn't it, write us.

## PRICE REDUCTIONS.

We announce the following reductions from our 1921 catalog prices.

**Dadant's Foundation, 12c per pound.**

32% discount on Lewis Famous No. 1 sections.

30% discount on Bee Hives and all other wooden goods.

25% discount on Bee Veils and wood and wire excluders.

20% discount on Bees and Queens and all other excluders.

10% discount on Honey Extractors and metal goods.

Special low prices on Tin Cans.

**Immediate shipment. Order NOW.**

**DADANT & SONS**  
HAMILTON, ILL.

Catalog and Prices on Bee Supplies, Beeswax, Wax Working into Comb-Foundation, and Comb Rendering for the asking.



# GLEANINGS IN BEE CULTURE

JULY, 1921

## EDITORIAL

JULY is an excellent time for requeening. By replacing inferior queens now with young



### Best Time for Requeening.

queens carefully reared from the best stock, the beekeeper should add many dol-

lars to his income next year. If these young queens can be reared during the latter part of the honey flow in July as can usually be done in the North, they will begin to lay just at the right time to help insure a good colony for winter. A young queen that begins to lay in August not only puts the colony in much better condition for winter by laying more eggs late in the season than old queens, but she is also in prime condition for the heavy brood-rearing next spring in building up for the honey flow. Many beekeepers are so busy with their crop of honey at this season that they think they cannot afford to take the time to rear queens to replace old and inferior ones, but it usually pays and pays well to take the time to do this.



OWING to the present rate of foreign exchange and the lack of a market in Europe,



### Price of Beeswax Abnormally Low.

immense quantities of beeswax are being dumped upon the market

in this country at heretofore unheard-of prices, which is depressing the market on domestic wax. Just how long this dumping will continue no one can tell, for under present conditions, even a high protective tariff could not be expected entirely to prevent it.

This wax is not able to compete with domestic wax for all uses on account of being an inferior grade, altho pure. This will prevent the price of domestic wax from sinking to the same level as the foreign wax, which comes originally chiefly from Africa, and domestic wax is holding up remarkably well under this pressure.

Fortunately beeswax is not a perishable product and does not have to be rushed to market when the price is low. Furthermore, by using comb foundation the beekeeper is both a producer and a consumer of wax. Many and perhaps most of them are larger consumers than they are producers.

THIS is growing slowly; but owing to the general economic conditions over the coun-



### The Dr Miller Memorial Fund.

try the amounts subscribed are small—seldom more than a dol-

lar, and often less. This morning, June 10, the Alameda County Beekeepers' Association of Oakland, Calif., a real live bee society, by the way, thru its president, Cary W. Hartman, sent a check for \$35.00. The association expressed the wish that we might be able to establish a chair in bee culture at some college; but, unless the funds come in much heavier than they have been doing, this would not be possible, tho we could put up a monument or establish a small bee library. The action of the association is splendid, and we hope that other organizations of a like character, state and county, will follow the example. In the meantime let individual subscriptions continue to come in as before.



THE heavy brood-rearing in April in many of the northern States this year has brought



### Effects of the Break in Brood-Rearing in May.

on certain conditions not often encountered in this portion of the country. Many

colonies had as much brood the first of May as they usually have the first of June, and after climbing to the peak of brood-rearing a month or more earlier than usual they greatly reduced brood-rearing in May. Apparently after a spurt of such heavy egg-laying the queens must have a rest, not being able to keep up the pace for any great length of time. Many queens were superseded late in April or early in May, and many of the early swarms, which came a month ahead of the usual time for swarming, were a result of superseding.

During May the colonies, having their spurt of spring brood-rearing over with, reared brood sparingly even when abundantly supplied with stores, and in colonies short of stores the queens in many cases almost suspended egg-laying entirely, just at the time that spring brood-rearing is usually at its height. Even stimulative feeding at this time could not be depended upon to

keep up brood-rearing as extensively as it had been carried on earlier. There was, therefore, a break in brood-rearing for two or three weeks in May, which has resulted in a lack of the usual number of emerging bees in June.

When the honey flow began from clover about the first of June this lack of young bees was quite noticeable, for when most of the field bees were in the field during the day, the hives appeared to be almost deserted, the majority of the workers being old enough to work in the fields. Another peculiar thing brought about by this condition was noticeable in the supers, when the field bees were in the hive in the evening or during a shower. Instead of the supers being occupied largely by young bees they were apparently filled with old bees, which usually stay in the lower part of the hive when the supers are occupied by young bees.

Under these conditions there should be but little if any swarming until young bees begin to appear again in great numbers. The usual June swarming season should therefore make its appearance late in the month and probably extend into July, altho most colonies that were well supplied with stores were unusually strong when clover began to yield. Beekeepers of the northern States are so accustomed to the swarming season coming soon after the beginning of the honey flow that it is quite a novelty to see rousing colonies send most of their workers into the fields and the supers, with no thought of swarming.

EVEN the experienced beekeeper usually overestimates the amount of honey on the



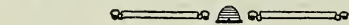
#### Leave More Honey For the Bees.

hives toward the close of the honey flow, and in producing extracted honey the tendency is to leave too little for the bees. In many cases colonies run short of stores in August after the crop has been removed where there is no fall flow.

With the depressed honey market it would be folly to extract honey which may not find ready sale except at a low price, expecting to feed the bees sugar syrup for their own use. It is far better to leave enough honey in the combs now to supply an abundance for the use of the bees until next season. The beekeeper cannot afford at this time to trade sugar stores for honey with all the risk and trouble that would result from making such an exchange, to say nothing of the advantages of honey stores for brood-rearing in building up next spring. The wise beekeeper will leave more honey with the bees than he thinks they can possibly need when he removes his crop.

Beekeepers in the far North can feed their colonies a sufficient amount of sugar

syrup for the time the bees are confined to their hives to insure good stores for the winter period, but this should be fed late after brood-rearing ceases and should be given in addition to the honey stores which will be available for spring brood-rearing after the bees have consumed the late-fed sugar stores. By using but little, if any, sugar for feeding the bees, and leaving honey instead, the total amount of honey thus kept off of the market should be enormous and should greatly help to relieve the present depressed honey market. It is time for beekeepers to cease helping the sugar market at the expense of the honey market.



THE present high prices of equipment and greatly increased operating expenses, together with the lower prices of honey, are causing beekeepers to think seriously of



#### Production Costs of Comb and Extracted Honey.

the cost of producing honey. M. G. Dadant, in the American Bee Journal, sets forth some interesting figures on production costs of comb and extracted honey. From these figures, which were compiled by Frank Rauchfuss, Mr. Dadant concludes that it would take a production of 100 pounds per colony of extracted honey to net the producer as much as a production of 48 pounds of comb honey per colony, figuring supplies at prices prevailing when the 1920 crop was harvested. The figures were compiled on a basis of 500 colonies in eight-frame hives for comb honey and the same number of colonies in ten-frame hives for extracted honey.

Mr. Dadant raises the interesting question whether the 500 colonies operated for comb honey would be able to produce 48 pounds while the 500 colonies operated for extracted honey were producing 100 pounds.

The Junior Editor (G. S. Demuth) has operated a series of apiaries for comb honey in northern Indiana for many years. During at least the past 25 years some colonies in these apiaries were operated for extracted honey, and during the past few years one of the apiaries was run for extracted honey entirely. The yields of the two types of honey in these apiaries under the same conditions, with colonies of equal strength, indicate that an average of about 75 pounds of comb honey can be produced to 100 pounds of extracted honey. During some seasons the ratio is even greater, while during other seasons it is less. Other locations would probably give different results; but, according to the figures published by Mr. Dadant, the production of comb honey under present conditions should yield a much greater profit than the production of extracted honey in locations similar to that mentioned. As pointed out by Mr. Dadant, much depends upon the locality and the season as well as upon the management.



WE do not take honey off until the crop is all on the hives. This calls for a large stock of supers, and we count on an average of at the

## TAKING EXTRACTED HONEY

*Removing Honey in Wholesale Way After the Honey Flow. Circumventing Robbers. Extracting with Comfort*

By Morley Pettit

that suits best; if not, we have to make shift until some are extracted. To put on escapes the procedure is somewhat like this: Go to the first hive and

very least three ten-frame L. supers and a shallow super for each colony, spring count. That is not really enough for a maximum crop at all yards, as for example in 1916. That was the year it rained all the previous fall and all spring right up until June 25 after the clover had been in bloom for weeks. Then it suddenly turned hot, and for one month things happened! Toward the end of that month we had three supers on everything, four on a great many, and five on quite a few, all nearly full of honey and not a pound of it ready to extract, according to our standards. The weather and the honey flow were such that they could not ripen it. Where we would have been with only one or even two supers per colony I hate even to imagine. While on Government work I have visited beekeepers in cold weather and have seen their honey all in five-pound pails with a half inch of clear liquid over the granulated part in every pail. They said their honey was always that way, and thought it was a normal condition for good clover honey. They extracted frequently from one super per colony during the honey flow, turned out a great deal of unripe honey, and complained about the low price! As soon as the colony has some honey in nearly all the cells of a super another is given, always next the brood-chamber. Yes, it means a lot of lifting; but we are sure it pays. We have tried putting the empty super on top and it does not work—not in our "locality." After having made some increase and melted up some old combs we generally run short of combs toward the end of the honey flow and supers of foundation are in order. This serves the double purpose of getting combs and encouraging the ripening of the full supers above. We try to add foundation freely enough to have some partly drawn to take off; that shows they have not missed gathering for lack of space, yet it gets all well capped. Combs with wide top-bars go nine in a super, narrow ones ten.

### Bee-escapes for Stripping Apiary of Its Honey.

When it comes to taking off the honey we take along escape-boards enough for one whole yard. We used to tilt the stack and slip the board under all at once, and then we tried taking one super off each hive at a time, thinking they would go out of one more quickly than from the whole stack. Now we do not do either. If enough empty combs for one super per colony in one yard can be saved from the supering season,

tear down the stack of supers, saving out the shallow super and any real light combs. The shallow super has been on top of the stack all summer and should be solidly filled and capped. Remove the excluder and place the shallow extracting super on the brood-chamber, then the excluder and a super containing empty combs and any unripe honey there may be in the last super which had been added to the hive. The escape goes on top of this and then the pile of supers of honey. Now the escaping bees have somewhere to go, and if the supers do not contain one cell of brood they will clear rapidly, as a rule, altho there are exceptions. This seems like work, and I do not know how to get the best results without work; but there are always two men to do it. After the escapes are all on some responsible person must go over every hive again and see that robbers have no possible chance to get into any super. They will soon be all unguarded, and if robbers ever get a start the fat is surely in the fire. With everything secure, that yard should be left to itself for a full 24 hours; if the weather is inclined to be cool, 48 hours is better.

### Loading and Getting Away Without Trouble From Robbers.

In taking off supers at the end of the flow the struggle with robbers is the greatest difficulty. Where trucks are to be loaded direct from the hives this is accentuated. When it is very hot and bright we sometimes have to work rather late in the evening; but the latest plan we have tried is ordinarily sufficient to keep them within bounds. First, see that there are no very weak or queenless colonies. Then teach everyone to be as careful as possible about leaving combs exposed for bees to get a taste. Next, have a quantity of soft cotton cloths, each one large enough to cover a super, soaking in a pail containing a medium solution of crude carbolic acid. The crude kind will not burn the hands like the refined, yet it is quite as good as a repellent. Three persons can work to advantage at taking off. The supers are stacked five or six high close to the hives with an escape-board under and on top of each pile and a carbolized cloth over the top in addition. Where nine combs in a super can be crowded together and a tenth put in, this is done to prevent swinging while on the road. The taking off and filling out and stacking and covering with boards and dripping carbolized cloth, the brushing out occasional su-

pers where the escape did not work, the taking off escapes and covering the hives, and all the while circumventing the robbers will keep three persons going well and lively. Now the truck must be conveniently placed, yet on solid ground, where there can be no possible hitch in starting, as it is hard to pile the load quite bee-tight. The driver mounts his truck, and the other two with a good wheelbarrow hand up the supers, bringing along the carbolized cloths. These are again used on the piles on the truck.



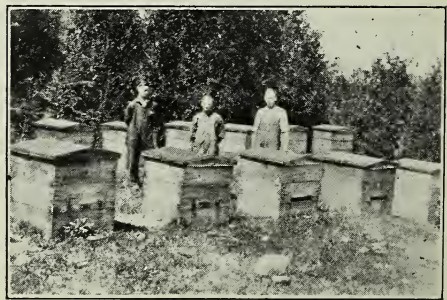
The Pettit Apiaries Ford ton truck with special rack for hauling supers. This rack holds 100 empty 10-frame extracting supers or 50 filled supers. Note the garage built in the honey-house. Loads of honey are taken inside away from the bees for unloading.

Just as fast as the supers can be wheeled and carried, they are piled on and kept covered. The rack sides are slipped into place and keyed at the corners so that ropes are not necessary. It takes only a few minutes to get loaded and away. Just after starting one man riding behind removes all the cloths so the bees can fly out and go home as we drive slowly for the first mile. When we start stripping one yard we never stop until the supers are all off and away. Making the little piles down the rows, instead of piling them on the truck as they are removed from the hives, prevents forming one grand center of attraction for robbers where the truck stands. Where convenient we take two truck loads at a trip. The little Ford will not carry many, but it often saves an extra trip with the larger truck.

#### Cleaning Combs After Extracting.

Having arrived home the loaded trucks are both driven into the garage, which is one room in the apiary building with a door opening directly into the extracting-room. As the whole building is bee-tight, the loads are immediately under cover, and need not be taken off until morning if not convenient. After the supers of one yard are all home, or sooner if we can arrange to set two

men extracting while the trucking is still going on, they are extracted to supply empties for the next yard. The next question is to get these empties placed without exciting robbing. We have them cleaned out before taking them away. That is the only practical way which I know. I have tried the various methods advocated for getting combs cleaned out after they come from the extractor, and have settled on one which I do not think can be improved on. We have over 100 colonies in the home yard. There is a large back lot with no dwelling houses near it. Just at dusk, when very few bees are flying, the supers are wheeled out into this lot and piled loosely about, with the combs carefully spaced, so that none touches another or a super side. Next morning the bees do the rest. There is not the slightest tendency to start robbing in the apiary, and it does not spread foul brood. But there are certain precautions. We never put out fewer than 100 supers at once. That satisfies all their robbing instinct, and when the combs are cleaned they are ready to call it a day and quit. We examine all our brood-chambers thoroly several times in the season, attending to the few cases of disease, and, of course, their supers never figure in an affair of this kind. I have practiced this method as long as I have been a bee-keeper, and that is almost long enough for me to begin to brag about how many years it is, yet I do not know of any cases of disease in the home yards where all the cleaning is done. As a matter of fact, I fear that not much of this honey gets stored. I am sure that a great deal is wasted. On that account we run them fast and long in the extractor. If the combs get a shower while they are out, so much the better. Sometimes we turn the hose on them to thin the honey,



Not the Three Graces, but the three helpers in the Pettit Apiaries.

and the bees clean them much better and with less soiling. After that they are ready for anything. They may be taken to an apiary in robbing time without causing any excitement, and that is worth a great deal. While it is still hot in August and early September we take back to the hives enough supers to prevent clustering out, and tho no surplus may be expected it is usual



to have two or three supers of combs on each hive. We have a theory that bees which sit outside the hive day after day tend to become demoralized and lose their colony instinct. A great many of these combs will have to be run thru the extractor after the final taking off, and without much reward, but we think it pays. Then there are the unexpected late runs of honey, usually of inferior quality, which would be crowded into the brood-chamber or lost without the surplus space they provide.

#### Conveniences for the Extracting Room.

The extracting-room has an eight-frame extractor, a capping melter heated by steam, and some long straight steam-heated uncapping knives. The honey is pumped from the extractor to the store tanks and not strained. After standing for three or more days these tanks are skimmed thoroly and are ready for filling into the selling packages which are ten-pound and five-pound pails. The capping melter is made on the principle of the Peterson, but uses steam instead of hot water. First, I made a box 11 inches deep, 18 inches wide, and four feet long, and had it lined with galvanized iron, leaving one end open as in the case of the Peterson melter. Then we took pine strips 5/16 inch thick by 7/8 inch wide and nailed them crosswise on the bottom so as to send the steam back and forth as it advances from one end of the melter to the other. On this a heavy sheet of galvanized iron was fastened and soldered at the sides to form the hot surface for melting the cappings. This leaves a space of only 5/16 inch deep for steam between the two sheets of metal, and the wood underneath helps prevent escape of heat downward where it would be wasted. The hottest steam enters the steam chamber directly under the outlet where wax and honey flow out, and the exhaust comes from the upper end and is conducted by a piece of hose into a pail of water where it condenses. Hot water from the steam which condenses in the steam chamber also flows out here. This pail of water serves the double purpose of keeping the room free from steam and providing hot

water for washing hands, etc. It sits over the drain in the cement floor so a spill does no harm. Two pipes coming up, one on each side of the capping melter, take steam from the main to supply the uncapping-knives before it enters the steam chamber. Half-inch steam pipes are used thruout. Cut-off valves properly placed give complete control of the steam, so it may be thrown more or less into the melter as desired. The source of steam is a New Perfection oil water-heater with a ten-gallon boiler. Steam or hot water may be had from this at will. When steam is wanted the water inlet is closed, and when water is wanted the pressure is turned on again. Thus we can have steam all day for extracting, then turn in the water, attach a hose to the hot-water tap which stands beside the cold-water tap over the sink in the extracting-room, and wash down the floor. After that the men can go to the bathroom opening off the carpenter shop upstairs and have hot water from the same source for a good clean-up under the shower.

#### Uncapping and Extracting.

The steam knives, with straight handles and long enough to reach easily across the comb and still leave the hand back of the bottom-bar, I consider a very important part of the outfit. They must have sufficient head of steam to keep a jet coming from the little hole at the end during the whole time a sheet of capping is being cut off. With combs well bulged one whole side is uncapped at one stroke, and the straight handle is much easier on the wrist than the regular knife, with what I call that senseless crook so tiresome to the wrist. The top and bottom bars act as guides for the knife, and everything goes. After once or twice uncapping with a knife of this kind the combs become as even on both surfaces as so many boards. We do not care how much honey goes with the bulging cappings to the melter. It is not injured, and it keeps the wax floating freely off the hot surface. As it comes from the wax separator it is strained into the extractor, and its heat fa-

(Continued on page 425.)



The "T" yard, Pettit Apiaries. Eighty-six colonies in single colony winter cases. These are not yet unpacked for summer.

ALL reversible honey-extractors on the market make use of one of two principles for changing the sides of the combs. The first one has been used for the last 20 years, and it has given very good satisfaction; but it has its limitations. The other one, perhaps, just as old, but newer in its application, is attracting a large amount of favorable comment. In the older type the baskets or pockets are hinged on the sides, after the principle of

## POWER EXTRACTORS

### *A Glance into the Inside Mechanism, Showing How Reversing is Accomplished*

By E. R. Root

turned to its first position and extracted again. This makes two reversings, and each time the machine must be slowed down, and stopped and started up again,

all of which consumes valuable time right in the midst of the honey season when time is precious and help that is not afraid of bees is often hard to find. In hand-driven machines it also wastes energy.

The other principle, altho it is as old as the first, but newer so far as the general use is concerned, is rapidly coming to the front. The baskets, instead of being hinged on the side and swinging like a door, are pivoted in the center. If the reader will imagine a shaft passing thru the center of the comb pockets or baskets and thru the center of the comb lengthwise, and if he can see in his mind's eye this comb or basket revolving on this shaft like a top, he will understand the principle. Of course it is impossible to have a shaft go thru the comb; but it is possible to have the basket pivoted at the top and bottom; or, more exactly, it is impossible to have the basket revolve on a shaft running thru its center, because there can be no shaft going thru the center of the pocket without interfering with the insertion of the combs. Machines are now built

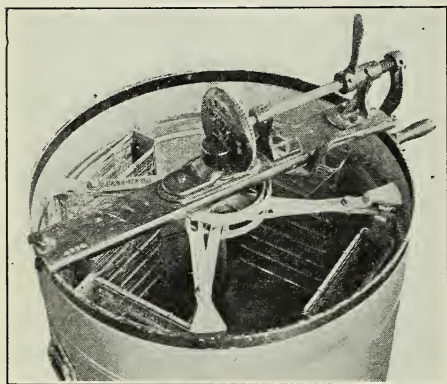


Fig. 1.—This shows the principle of reversing of the old automatic extractor. The pockets at the top and bottom are hinged on one side. The lever here shown connects each pocket with the reversing-drum, which when temporarily slowed down, and then stopped, causes the lever to shift from one position to the other. An internal sector gear is connected with each pocket on one end of the lever, and a slot and pinion on the other end. Fig. 2 shows the pockets in the act of reversing, when the pockets will be revolved clear around to the other position, subjecting the other side of the comb to the action of the centrifugal force.

a common door. The reversing is accomplished by swinging the pockets on their hinges from one side clear over to the other. This principle necessitates the stopping of the machine, or nearly stopping it, before the reversing can be accomplished. Even at slow speed the centrifugal force tends to throw the baskets over to the reverse side with a bang unless care is used. With new or tender combs, or combs not wired, there is more or less breakage, especially when hired help does the work.

The hinged-door principle of reversing requires the slowing down and stopping and reversing of the direction of the reel in order that the combs may be reversed. In modern practice it is the almost universal custom to start throwing out most of the honey on one side at a comparatively slow speed to reduce the weight of the comb. It is then reversed, when the other side is extracted clean. The first side is then re-

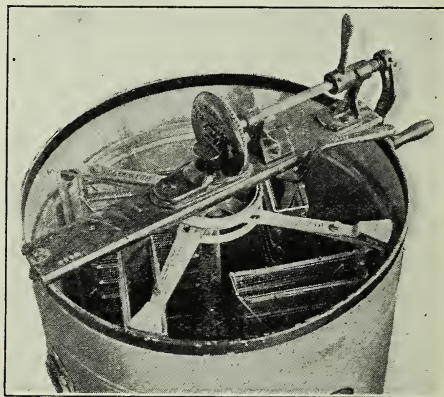


Fig. 2.—To understand this it is necessary to refer to the legend under Fig. 1. The pockets are in the act of reversing in the manner explained. The usual plan is to start the extractor up and throw out most of the honey on one side of the comb at a relatively slow speed. A pressure on the brake lever retards and stops the reversing-drum while the reel itself is run slightly faster. The result is, the lever here shown throws the pockets the other side to. When this side has been cleaned the brake lever is applied, the reel is stopped, and, while the pressure is being applied to the brake, the direction of the reel is reversed. This movement brings the pockets back to their first position, when the first side of the comb is cleaned at full speed. To accomplish reversing the next time on the next set of combs, the reel is turned in the opposite direction, when the work is performed as already explained.



embodying this idea, so that the combs can be reversed on a central axis. This makes it possible to reverse at full speed without stopping or slowing down the machine. It

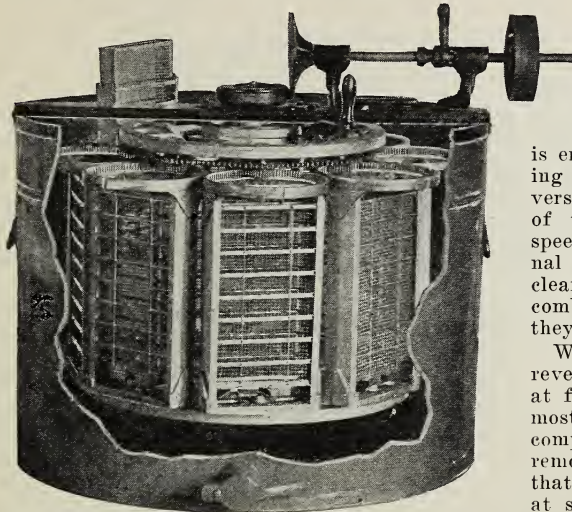


Fig. 3.—This figure, and Figs. 4 and 5, show the new Buckeye central-pivot reversing extractor that is much more efficient in time and labor, and in the saving of the breakage of combs than the other machine during the period of reversing. The reversing can be accomplished at low speed, full speed, or constantly, without stopping or slowing down the reel. As will be seen, each pocket is surmounted at the top with a ring, inside of which are teeth that mesh with a small pinion, the purpose of which is twofold—to prevent the top of the pocket from flying out by centrifugal force, and to assist in reversing. The ring and pinion at the top of the basket make it possible to insert the combs and yet allow it to reverse on a central pivot or on the imaginary axis that passes thru the center of the comb and the pockets lengthwise. Exactly in line with this axis is a pinion at the bottom, mounted on a large ring or spider which is secured to a hollow shaft loosely journaled to the main shaft to which power is applied. By turning to Figs. 4 and 5, the exact method of reversing can be seen.

not only saves loss of time when time is precious, saves power, saves honey, but it also saves comb breakage. Machines built on this principle are slightly more expensive, but far more efficient, both in time and in the amount of honey secured from the combs. The new machine, being more heavily built, makes it possible to extract the combs much cleaner.

One of the latest machines involving the principle of the central-pivot reversing is the one shown here. As will be seen by the illustrations, the baskets are

pivoted at the bottom, and at the top they are held in position by a small gear wheel meshing inside of the ring that surmounts the top of each basket. This small gear wheel is journaled in a large rim or ring attached to the center shaft of the extractor. The pinion serves the purpose of reversing the pockets, and at the same time holds the top of them against the centrifugal force that is enormous. A pressure on the reversing lever causes all the baskets to reverse simultaneously, even tho the reel of the extractor is running at full speed. The arrangement of the internal gear or pinion leaves the pockets clear, so that it is possible to insert the combs and to remove them as soon as they are extracted.

With this machine it is possible to reverse every comb four or five times at full speed; but it is better to take most of the honey from one side at a comparatively slow speed. This will remove three-fourths of the honey on that side. The combs are then reversed at slow speed, when the machine can be speeded up to its capacity: but before it reaches full speed most of the honey is extracted from both sides of the comb. This is easier on the combs. The combs lightened of their weight can be cleaned al-

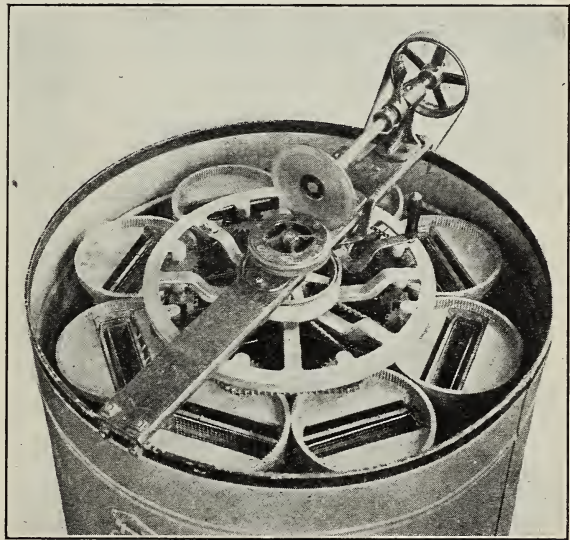


Fig. 4.—This is a top view looking down into the eight-frame Buckeye extractor, the pockets of which are reversed on a central pivot as explained in Fig. 3. It will be seen that it is perfectly easy to insert and remove the combs; and, as explained in Fig. 3, the tops of the pockets are firmly held in place, no matter how severe a strain may be placed on them. The act of reversing is accomplished by means of sprocket wheels that are made integral with the pinions meshing with the internal gear or rims at the top of each pocket. Each of these sprockets is actuated by a chain driven from a sprocket mounted on a hollow shaft loosely journaled on the main shaft from which power is received.

most dry at a high speed. There is no slowing nor stopping two times in order to reverse, as in the older styles of machines.

Where American foul brood is present in the locality the bee-keeper may be compelled to melt up his old combs and rely largely on new ones built from foundation. It is these new first-year combs that are favored in the new machine, reversing on a central pivot. See what Richter says in this issue, page 433.

The wire baskets for holding the combs in this machine are removable—a feature that will be appreciated by those who like to clean or sterilize the extractor after extracting combs having a look suspicious of foul brood.

It is built very strong to stand the heavy strains that come from high speed. The difficulty of supporting the tops of the pockets of the central-pivot extractor here shown from the enormous strain of centrifugal force and yet leave it possible to insert the combs, has been solved by the use of the internal gears which also accomplish the reversing.

The time is coming when bee-keepers will wake up to the fact that they are not extracting their combs clean enough. To do this as it should be done, the combs should be thoroughly wired, and the extractor should be built to stand a higher speed than has ever before been thought necessary. The machine here shown was constructed with this end in view.

It is a mistake to think that all the honey from very wet combs, because the extractor could not do a cleaner job, will be

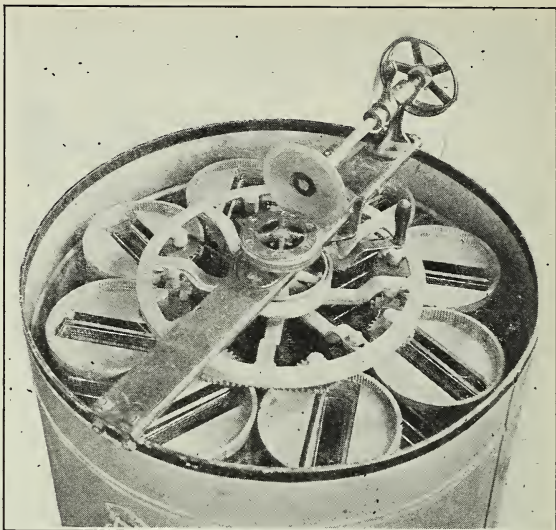


Fig. 5.—A pressure on the reversing-lever as shown by the upright handle slows down the reversing-drum very slightly. This action causes every one of the sprockets and the comb pockets to revolve half way, even tho the reel may be running at full speed. In this picture the comb-pockets are seen in the act of reversing. In the space of a second all of the eight combs will be reversed, even tho the extracting reel is revolving at full speed. The usual plan of procedure is to extract most of the honey from one side of the comb at a relatively slow speed, reverse without stopping or slowing down the extractor, clean all the honey out from the second side (still at slow speed) when the reversing-lever is pulled, thus causing the first side to come back to its first position while the honey is cleaned out at full speed. One more reversing at full speed cleans the second side. There is no loss of time in reversing, which can be done as often as desired, at full or slow speed. The reversal on a central axis is much easier on the combs, causes almost no breakage, and at the same time the work is done much more thoroughly than in the machine illustrated in Figs. 1 and 2.

saved. The dryer the combs, the more honey and the less gorging on the part of the bees. It is here that *power* extractors have an immense advantage over those driven by hand.



CONSIDERABLE interest has been manifested in our Push-in cage. Several questions have been asked, such as, "How has it functioned since

it has been in use another year?" "Is it another fad that will quietly retire into oblivion, or is it a real feature of beekeeping that will last?" I will try in the following article to give a plain statement of the success this cage has had, and also mention several new uses that can be made with it.

In the August number of *Gleanings*, 1919, this cage was described. In the same issue,

## QUEEN INTRODUCTION

### *A Combination of the Push-in-the Comb Principle and the Chantry Principle*

By Jay Smith

the queen-excluding device was also described by Mr. Atwater and Mr. Thompson. It does not seem to be clear just who was first to use this device; but

at least credit is due these gentlemen for again calling attention to it, as most of us never before heard of it, or if we had, we had forgotten about it. I will admit that when I read the article, I did not think there was much merit in the device; but, later when introducing many queens with my original Push-in cage during a robbing season, I would find that once in a very great while a



queen would be killed. The Push-in cage was nearly perfect and yet not quite. What could I do to put on the finishing touch? I wondered if the Atwater-Thompson-Chantry-Costello device (that is a rather long name for such a small doofunny) would help. Then I happened to think of the principle of the newspaper method of uniting bees brought forth by Dr. Miller. Why was it so successful, and why were no bees killed when using it? Evidently it was because the bees after gnawing thru the paper came in contact with each other one at a time. That is the same principle involved in the queen-excluder. So I gave it a trial in connection with the Push-in cage and presto! it was the missing link! I put it to all sorts of severe tests, and it was successful every time. I found that to be absolutely sure in every case it was necessary to put in the cage containing the queen only, and leave it two days. Then remove the gate over the queen-excluder so that the bees can get to the queen, and leave it two days more, then remove the cage, thus turning the queen loose.

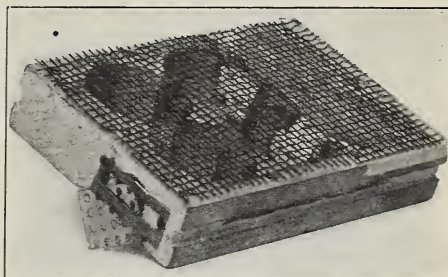
#### Importance of Permitting Access to the Queen Thru Perforated Metal.

We must remember this: A queen is not introduced until she has mingled with the bees. If she is in a cage and kept away from the bees, she may be in position to be accepted, but acceptance must take place after she is out of the cage, if the ordinary mailing cage is used. Now with the Push-in cage note what takes place. The queen is on the comb, has good honey to eat, and takes on the odor of the colony; but if no bees can get to her, she still has the dangerous ordeal to go thru—that of actually getting among the bees. If she suddenly gets among them, she may be frightened and start to run and the bees will grab her; but, if the bees get to her one at a time, things are different. I have watched the bees get into the cage thru the excluder many times. When the first bee gets in the cage with the queen, the bee is very much afraid of the queen and will usually turn around and try to get out. As the odor of the queen has been given to the comb enclosed by the cage, the bee feels it is getting into another hive. Then the bee will go up to the queen and hold out its tongue and offer to feed her, as if it were making a peace offering. Another bee comes in, then another. Each acts as tho it were getting into a new colony and is in no mood to offer fight. By and by more bees come in and pass out, and the word goes around that they have a queen. The queen at once speeds up on egg production, and the fact that all the cells under the cage contain one or two dozen eggs does not matter, as she keeps on, sometimes filling the cells half full of eggs.

#### Bees Behave as if Superseding Queen.

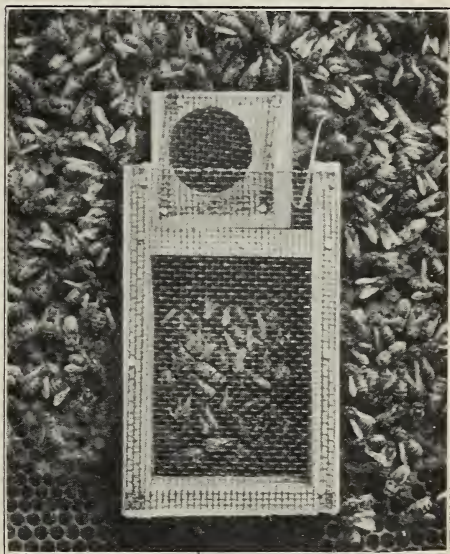
Now I believe the secret of the success of this cage is this: It is a known fact that

bees will accept an old, failing queen, when they would not a younger one. A queen that is being superseded can usually be dropped into any queenless colony and will



The Chantry principle as applied to the ordinary mailing cage. After two days the hole covered with the perforated zinc excluder is opened permitting access to the queen before she is released.

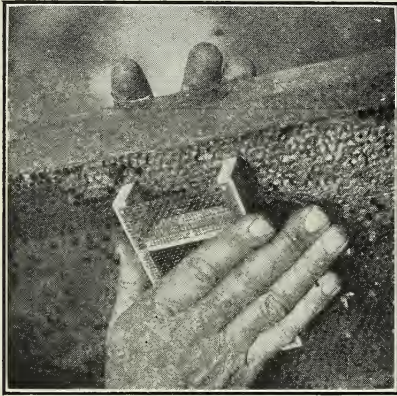
be accepted. I believe this cage gives the bees the supersedure impulse. They know they have a queen, for they have either been in with her or have had a smell of some of the bees that have; but they seem to think that if they have a queen, she must be a poor one, as she is laying eggs in only such a small patch and laying a lot of them in each cell. Plainly they seem to reason that that queen must be superseded. I have



The Jay Smith cage with reception cage in place.

come to this conclusion from the fact that the bees will build a piece of comb to the bottom of the cage in the space made by removing the frame to make room for the cage. On this comb they will start a large number of queen-cells, expecting the queen to lay in them. On a piece of comb only four inches long, I have frequently seen a

dozen queen-cells. Now as they believe they are superseding the queen, they will never kill her. When the cage is removed and the queen liberated, of course the queen will not lay in these cells; but, as she has reached a stage of heavy egg-production, she fills the worker combs with eggs at an astonishing rate. I have examined the colony the day after the queen was liberated and have frequently found large quantities



By holding one hand against the comb on the opposite side the teeth of the Push-in cage may be firmly imbedded in the midrib of the comb to prevent the bees from tunneling under and releasing the queen prematurely. It should be used on old dark combs having a tough midrib, so that the teeth will hold firmly.

of eggs in three combs; so it will be seen that not much time is lost for the queen, since if she had not been laying when released, as is the case when she is released from the common mailing cage, it would take her three or four days to build up to the state of egg-laying that the queen has that has just been released from the Push-in cage.

In using the queen-excluder with the common mailing cage, while it may be a help, it is far from being a complete success. In such a case the queen cannot lay, and if she is released in two days, she may be killed; and if left in four days, she will fret, as she wants to get out of the cage so that she can lay. Many queens will die in the mailing cage from this cause. In the Push-in cage, the queen seems perfectly contented and goes right on laying.

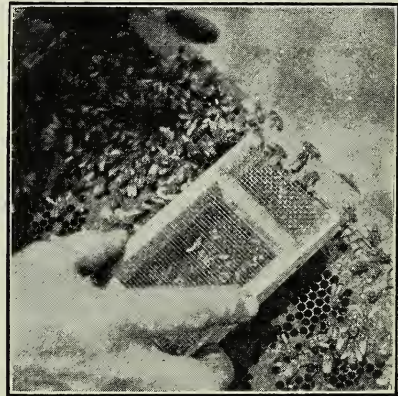
The queen-excluder is put on a little cage that we call the "Reception Cage." When the queen arrives thru the mail, the small piece of perforated tin on the mailing cage is removed, and the queen and bees are allowed to run up into the reception cage. A cork is then placed in the opening of the cage, the attendant bees will crawl out thru the excluder and escape, while the queen will remain in the cage. Doolittle said that these worker bees cause much of the loss in introducing queens, so we find it better

to do away with them. The mailing cage is burned, so any danger of disease is also eliminated.

#### Introducing Without Loss of a Single Queen

Now I am going to make the sweeping statement that I believe if this introducing cage is used according to the simple directions, that the bees will never kill a queen. What prompts me to make this statement is the fact that I have introduced hundreds of queens to colonies under all conditions, including a number to laying workers, and have never lost a single queen. A test that is as severe as introducing queens to laying workers is to introduce queens to colonies that are being robbed. In many cases the robbers were so bad that when I opened the hive to release the queen, they poured into the top of the hive in large numbers. Shortly after there would be a handful of dead bees at the entrance, but the queen was never injured. In one case the colony was overcome and all the honey robbed out. After dark I gave them a frame of honey and contracted the entrance. The queen was not injured but went merrily on with her laying, despite the fact that robbers were skirmishing around the entrance for several days. Hives may be opened as soon as the queen is released and as often afterward as desired, and the bees will never ball her, for they already consider her as their own queen.

A number of others have reported that they have done as well. A notable example is Mr. Mendleson of Ventura, Calif. He used a large number of these cages, intro-



The Push-in cage is quite handy for caging the queen to prevent swarming. The queen-cells should all be destroyed at the time of caging the queen and again in 9 or 10 days, the queen being released a day or two later.

ducing queens to many colonies, including laying-worker colonies and reports that he has not lost a single queen. Others have reported a variety of uses to which they have put this cage other than the introduc-



tion of laying queens. What I have said above applies to laying queens.

#### Other Uses for the Push-in Cage.

It is entirely successful in introducing virgin queens to full colonies. While I do not advocate shipping virgin queens thru the mail, still some good beekeepers do. In such cases our cage is ideal for introducing these virgins. It has been reported to me that in caging a queen to cure European foul brood, this cage gives best results, for the queen can lay a little while in the cage, and thus the caging does not injure her, as is frequently the case with other cages. It can be successfully used in caging a queen to discourage swarming, when cutting out queen-cells. It can be used in case some fine cells have been built by a colony having a good queen during the swarming impulse. The cage can be placed over the cell and the

virgin allowed to emerge in it. In introducing virgin queens to nuclei, some practice the method of placing a second virgin in the nucleus three or four days after the first one was introduced, caging the second one. As soon as the first is mated and laying, she is taken out, virgin Number 2 is released, and another introduced in a cage. Our cage is highly successful in such cases. In uniting colonies or in case an absconding colony goes in the hive with another colony and the queen is balled, she may be placed in our cage a couple of days and then safely released. If one has some laying queens which he desires to cage in a hive for any reason, the Push-in cage should be used, as a queen is not in any way injured by being kept in this cage.

Vincennes, Ind.



THE close of the honey flow brings some serious problems for the comb-honey producer. If it closes abruptly, without warning, it may leave him with a lot of unfinished sections; and if it tapers off gradually toward the end, the bees often do a poor job of finishing on the last supers. Since, in most cases, it is impossible to tell just when to expect the end of the honey flow, it is important to prepare for it in advance as much as possible and hold things in readiness until it comes.

#### New Supers Given Only as Needed.

One of the first steps in anticipation of the closing of the season is the giving of additional super room more sparingly. After the beekeeper has been doing his utmost to induce the bees to occupy and begin work in more and more supers during the fore part of the honey flow, the tendency is to go ahead giving additional room at the same pace too long. At a certain stage in the honey flow the emphasis should change from the expansion of the surplus room to a concentration of the super work to the smallest number of supers possible and still give the bees sufficient room.

It is sometimes a good thing if the beekeeper runs out of supers during the latter part of the honey flow, for it is surprising how much can be done in the way of furnishing enough room without giving additional supers by shifting supers from one colony to another, thus giving a little more room to colonies that are beginning to be crowded and reducing the super room in those having more than they need. In fact

## COMB HONEY PRODUCTION

### *Inducing the Bees to Finish Most of the Sections at the Close of the Honey Flow*

By Geo. S. Demuth

there comes a time during the latter part of the honey flow when it is better to have the colonies crowded a little for super room, but the difficulty is

to know when this time has arrived. The bees will usually stand a degree of crowding at this time which earlier in the season would have caused them to swarm or to loaf badly. Any new supers that are given at this time should usually be placed on top of those already on the hive.

#### Reducing to One or Two Supers Per Colony.

The second step in preparation for the close of the season is that of reducing the number of supers on each hive to one or two supers as soon as possible, concentrating the unfinished sections in these supers. Sometimes the bees are slow about sealing the honey, when it may be necessary to tier up the supers, four, five, or even six high, before any of them are ready to be taken off. At other times they seal the honey more promptly, so it is not necessary to tier up more than three supers high. Usually the bees seal honey more promptly toward the latter part of the honey flow.

As a rule it is not advisable to leave the supers on until all of the sections are finished, especially late in the honey flow, but when most of the sections are finished the super should be taken off and the unfinished sections sorted out to give back to the bees for completion. It is not safe to assume that a super is ready to be taken off by looking in at the top only. It is better to look in at the bottom also, for sometimes the sections of honey are sealed near the top and not sealed near the bottom.



Let us suppose that as the close of the season approaches a colony has five supers, four of which are nearly filled, and work has just been started in the fifth, there being enough unfinished sections scattered thru the four supers to fill one super. If these four supers are now taken off, the unfinished sections sorted out and assembled in one super which is put back on the hive, the work of finishing these sections will be carried on more rapidly, especially if the super of nearly finished sections is placed next to the brood-chamber, with the one in which but little work has been done on top. Of course these four supers would probably not all be ready to be taken off at once, but by going over all the supers every four or five days at this time, taking off and sorting those nearest completion, the supers can soon be reduced to a single nearly finished one for each colony, with an empty or nearly empty one on top to act as a safety valve if more room is needed. If there are not enough supers in which but little work has been done, to go around, an empty super should be given, providing there is still enough nectar coming in so that the bees will draw out the foundation, for the nearly finished super is usually finished more promptly if the bees are permitted to build comb in another super at the same time.

If the beekeeper has guessed well, the lower one of these two supers should be nearly finished just before the honey flow entirely ceases and the upper one should have but little unsealed honey stored in it, yet the foundation should be well drawn out and some of the combs at least partly built. This super, if taken off promptly and the bees permitted to clean out the little honey it contains, is just right for the first super next year. It is not possible always to guess so well as this, however, and while some colonies may come out just right, others will store considerable honey in the top super, while still others will not complete the lower one, so a further but final sorting of sections becomes necessary.

#### **Selecting Colonies for Final Finishing.**

During the time this last super is being finished is a good time to watch for colonies that are good finishers, as usually several colonies will be found in an apiary of sixty to eighty which do much better work at finishing than the others. These should be marked to be used in the final work of finishing.

The third step toward closing the season is that of removing all of the supers, doing this, if possible, before the honey flow entirely ceases and before the bees begin to varnish the cappings of the honey and the section boxes with propolis. The sections in the nearly finished supers should again be sorted and the unfinished ones given back to those colonies which were marked as the best finishers. This time, in assembling these unfinished sections in the supers, those nearest completion should be placed

in the middle, placing sections only partly filled in the outside rows. These sections for the outside rows may be taken from those supers which were on top acting as safety valves. As these supers are now arranged, the finishing is to be done in the middle of the super where it will be done more promptly, while the comb building, if any, is done on the two outside rows.

#### **Letting Bees Clean Out Unfinished Sections.**

The supers in which but little work has been done can now be piled up crisscross near the apiary and the bees invited to help themselves, providing there are enough such supers so that the bees will not crowd each other so much that they will tear down the comb. This, of course, should not be done if the apiary is too close to a neighboring residence, and should not be attempted by anyone but an experienced beekeeper. The last supers which were given to the finishing colonies should not be left too long, but should be removed as soon as most of the sections are finished. Usually it does not pay to return the unfinished sections from this last lot of supers for completion. Some of these may be sold as culls, or cut out and sold as chunk honey. Many comb-honey producers extract the honey from these unfinished sections and save the combs for bait sections the next season.

#### **Feeding Back Extracted Honey to Complete Unfinished Sections.**

If the honey flow fails suddenly, affording no opportunity to return unfinished sections to the bees for completion, they may be completed by feeding back extracted honey. In this case, the unfinished sections may be sorted into different grades and the lightest ones extracted to secure the honey to feed back in finishing the heaviest ones.

Feeding back extracted honey to secure the completion of unfinished sections was formerly practiced to a considerable extent by comb-honey producers, but has been discontinued by most of them. Comb honey finished by feeding back is usually inferior in appearance, tends to granulate early in the winter, and much more honey must be fed than is finally stored in the sections, a large amount being consumed by the bees during the process. Successful feeding back depends so much upon selecting colonies that are in just the right condition for this work and upon weather conditions at the time the feeding is done, that few will care to attempt it, preferring to sell the unfinished honey as culls and extracting that which cannot be sold in this way.

The important thing in taking care of unfinished sections to be used again the next year is to take them off before the wood is soiled with propolis and the foundation gnawed at the edges and also varnished over with propolis.

#### **Taking Off Comb Honey.**

In taking off comb honey during a good honey flow, bee-escapes are not needed. In

fact for out-apiaries it is inconvenient to use them, since an extra trip must be made to put them in place, but at the close of the season bee-escapes are almost a necessity.

When removing supers during the honey flow without bee-escapes a good operator soon learns the trick of driving the bees out quickly and taking the super away before any can return. As the cover is lifted, the bees should be started down at once with smoke and kept on the go until they leave the super. They must not be permitted to stop on the way to fill themselves with honey, for when they once get their heads into the cells, they pay but little attention to smoke.

Quite a number of bees can be brushed off the top of the sections when the hive is first opened, brushing and smoking at the same time. While the bees are being driven down, the super should be pried loose from the one below but not lifted until most of the bees are out, when one end of the super is lifted quickly, and at the same time pulled backward slightly, so it will rest upon the super below at one end, while being brought almost to a vertical position. All this should be done so quickly that the bees on the bottom of the super do not have time to get back among the sections before they can be brushed off.

If robbers are not troublesome the supers still containing a few bees may be simply leaned against the hive, standing on end, until the bees go out of them. If robbers begin to come, the supers can be piled up in the apiary, eight or ten in a pile, placing the first one on a hive cover or bottom, being careful to leave no openings where bees can enter. The top of the pile may be kept closed with a hive cover or an inner cover which is pushed off as each super is added, then quickly put back in place on the top of the pile. As these piles are uncovered from time to time in adding more, many of the confined bees escape. Finally while loading the supers to take them home, most of the remaining bees will leave them.

Sometimes the sections of honey can be sorted in the apiary without robbers bothering, and the unfinished sections returned to the bees at once, but frequently this cannot be done and it becomes necessary to haul the supers home to be sorted, unless there is a small portable honey-house at the apiary. When the supers are sorted at home, the unfinished sections can be taken to another apiary to be visited the next day.

#### Storing Comb Honey.

It was formerly advised that comb honey be stored in a well-ventilated room and the supers piled in such a manner that the air could circulate freely among the sections, the theory being that this arrangement would permit a further ripening of the honey after being removed from the hives. The plan is open to the serious objection that honey so exposed may absorb moisture if subjected to any great variation in tem-

perature, for warm air which may contain considerable moisture and still be relatively dry, coming in contact with cold honey, if chilled sufficiently, will give up some of its moisture, causing condensation on the surface of the honey. Honey that is well ripened is usually safer if the supers are piled in tight piles, the piles being closed at top and bottom. Its aroma will be better also.

#### Plan for Next Year.

While taking off the season's crop of honey, beekeepers are inclined to neglect plans for next season. It is not too early now to begin preparing for next season by replacing all inferior queens and by seeing that enough honey is left each colony when the crop is removed, so that none of them will run short of stores during late summer and fall, as too often happens, causing the colony to begin winter in poor condition.

When two brood-chambers were used for brood-rearing in building up in the spring, these extra brood-chambers, having been taken away when the first comb-honey supers were given and tiered up on certain colonies to be filled with honey, should be given back to the colonies, thus insuring their food supply for another year. By taking off the comb-honey supers a little before the honey flow ceases entirely, and giving a second brood-chamber about two-thirds full of honey, the bees can store the honey gathered at the end of the season in these instead of in unfinished sections.

#### Packing Comb Honey for Market.

Scraping, grading, and casing up comb honey mean a lot of work which must be done by some one who knows how, tho the person who does it need not be a beekeeper. Every producer will have his own way for doing this work, but the speed with which it is done depends greatly upon the arrangement of the scraping tables and the system used for grading and packing.

The scraping tables need be only large enough to hold one or two supers of honey and a trough or box to catch the scrapings. An apron can be arranged with the lower edge tacked to the trough for the scrapings, the upper portion to go over the shoulders of the operator.

In scraping the propolis from the edges of the sections a section may be held in the left hand in such a manner that it can be turned as the propolis is scraped from each of its four edges on one side, then turned over, and the process repeated.

For grading it is well to have a sample section to represent each grade before the operator for quick comparison. These samples should be the lowest permitted in the grade which they represent. One good way to grade and pack is to have several shipping cases conveniently placed, each being marked for a certain grade, so that the sections of honey as they are scraped can be put directly into the shipping case for its grade without further handling.



YOU'VE taught me a lesson. Never again will you find me taking honey out of the combs as fast as the bees put it in."

So said the first beekeeper to be fined under the new Wisconsin honey-grading regulations which have been in force since last August. A representative of the Division of Markets had found sour and fermenting honey labeled "Wisconsin Number 1" on sale in a grocery store and soon learned that the beekeeper who supplied it was in the habit of extracting honey without waiting for it to ripen. He is probably not the first beekeeper in the United States to be prosecuted for selling unripe and sour honey, but it was the first case brought for violation of a compulsory honey-grading law anywhere in the world.

The next case was more typical of violation of grades. Stacked up in a corner of a busy city grocery store were a dozen cases of comb honey all carefully labeled "Fancy White." Inspection showed uncapped and empty cells, occasional dirty sections, discoloration, and imperfect attachment to the wood. In other words it was a typical mixture of fancy, Number 1, and Number 2 honey with a few sections which could not even be considered Number 2. Consumers were being asked to pay the highest market price, and the purchasers would go a long way to keep from buying "Wisconsin Fancy" honey in the future, if the sale continued. The marketing specialist visited the beekeeper, who in this case proved to be belligerent, and insisted that his honey was as good as any. A warning was given, but the same condition was found a week later and again a fine and costs resulted.

#### Compulsory Grading Protects the Beekeeping Industry.

These incidents represent different phases of the grading of agricultural products. In the first case not only the man who sold the unripe honey, but every other beekeeper who ever had occasion to sell extracted honey in that neighborhood, would have been placed under a serious disadvantage if the honey had not been discovered and returned. Purchasers, grocers, and consumers alike, after losing faith in extracted honey, probably do not try it again for many years. The injustice to the consumer and to the distributor react against the whole extracted-honey business.

In the second instance the damage to the reputation of comb honey was serious. Sections marked "Wisconsin Fancy—White" should be the finest food product from the standpoint of appearance, nutrition, and quality that the purchaser can buy, and should be as much of a delight to the eye,

## COMPULSORY HONEY GRADING

### *How the Division of Markets is Helping the Beekeepers of Wisconsin*

By S. B. Fracker

in the grocery store and on the table, as they are later to the palate. Any sale which brings discredit on that label constitutes an injury to honey producers

which it is hard to estimate.

For several reasons compulsory grading of honey, cheese, potatoes, cabbages, and other farm products is being favorably received as a large scale marketing experiment in Wisconsin. The producers here are as hard hit as those of other States by industrial depression and deflation and by falling prices. In anticipation of this condition a division of markets was established in 1919 to assist in locating buyers, improving conditions of competition, and straightening out the channels of trade.

Sales of all kinds should be based on accurate descriptions of the material to be sold, especially where buyer and seller do not come face to face. This is the principle on which all the fruit packing of the orchard districts is based, and is the foundation on which they are developing a demand for standard qualities of fruit. One might as well expect to sell goods as first quality when that term is meaningless as to sell grain by the wagon-load instead of a legally defined bushel. In other words quality is as much a factor in price as quantity and should be as capable of exact description. Beekeepers believe honey can be accurately described and that the meaning of the terms used should be legally defined. Nobody profits by a standard price for all sorts and grades, as a low quality article not only fails to gain anything by being mixed with fancy goods but brings everything down to its own level.

#### Work of the Division of Markets.

Most of the honey-grading work this season, of course, educational. C. D. Adams, field agent of the division of markets, spends much of his time explaining the methods and standards of grading to grocers and beekeepers, with the result that the half a dozen prosecutions have been incidental rather than the most important part of the work.

It is now only a year since work was begun on the grading problem in Wisconsin and only six months since the grades went into effect. Since then every container of extracted and every section of comb honey produced in Wisconsin has had to be marked with the grade or with the word "Ungraded." No small part of the task has been to carry information about that requirement to the 10,000 beekeepers of the State. No lists of honey producers, either by the assessors, census-takers, or inspectors, are complete.

The first snag struck by the division ad-

ministering the grading was what to do with the bottling industry. To supply a constant demand wholesalers were mixing honey from all parts of the United States and selling it under all sorts of brands. An arrangement was finally made with them to follow the State regulation in grading pure Wisconsin honey and to mark honey which was either blended or entirely from other sources with a statement to that effect.

Whether with justice or not, our beekeepers consider Wisconsin clover and basswood honey just a little finer than any thing else on the market. Bottlers need some of it because of the ease with which it may be prevented from granulation—especially as compared with the western product where it meets the stiffest competition. As a result Wisconsin honey is almost always held at from three to five cents above the wholesale market price for honey from other parts of the United States. Even in this year of a dull market, nearly the entire supply of extracted honey (80 per cent) had by January 1 been disposed of at an aver-

Now and then I hear of little incidents which show how standardization is taking among consumers. In one place a grocer was called over the phone one morning and given an order which concluded:

"Oh, yes—and I want a five-pound pail of honey. Have you any on hand?"

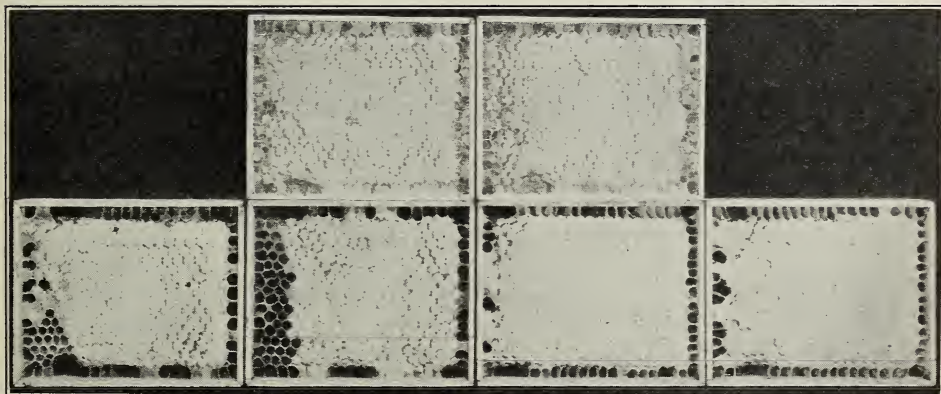
"Certainly, ma'am," and it was duly sent.

Later in the day the pail came back unopened.

"What's the matter?" asked the grocer.

"It's marked 'Ungraded,' and I want 'No. 1.' If it isn't the first quality we can't use it," was the answer. And nothing the grocer could say convinced this customer that if the beekeeper produced "No. 1" extracted honey he would neglect to label it so.

I have not touched on the details of the grades, but a word will suffice for that. All extracted honey which is well strained and fully ripened so that it weighs 12 pounds to the gallon is known as Grade No. 1 Ex-



Upper two sections "fancy." On lower row the two on the right are "No. 1," and the others "No. 2."

age wholesale price to the producer of 25.8 cents a pound, according to the U. S. Bureau of Crop Estimates. In other words our beekeepers think "Wisconsin" is just as big an asset to them as "Airline" is to the A. I. Root Company, and they intend to cash in on that asset if possible. If the primary purpose of the honey-grading regulations, then, is to provide for an accurate description of honey quality and finish, a second and equally important object is to advertise what we believe to be a particularly fine product.

#### Standardization of Grades of Honey.

It is too soon to determine the ultimate effect of standardization on the honey business. Large quantities are, of course, being sold "Ungraded," but this is a smaller proportion than was expected. Over 600 beekeepers have secured grading stamps already, including all the larger commercial producers and many farmer beekeepers.

In addition the color, net weight, and packer's registered number are required on the container. Comb honey is divided into Fancy, No. 1, and No. 2, depending on the finish, the attachment to the wood, the number of uncapped cells, etc. It is also marked with the color, and with the packer's number.

A standing committee of the State Beekeepers' Association is working with the marketing division for the perfection of the standards and the successful administration of the law. If it were practicable, many of the best beekeepers would like to see the source of honey required as part of the label, and the color omitted. But so much of the State's product is mixed, that few beekeepers know exactly where their bees are getting nectar from day to day. Nor is there an adequate chemical means of discovering whether honey really came from the plants the beekeeper says it did. The greatest variation in quality is in the amber



honey, which are sometimes excellent and occasionally very unsatisfactory.

While compulsory grading is still in a somewhat experimental stage there is no movement in opposition to the system as a whole nor any suggestion of abandoning it. When, before the state meeting, rumors of an anticipated grading debate spread, county associations began passing resolutions favoring the grades and instructing their

delegates to support them. Wisconsin beekeepers believe that standardization will be the biggest help in the present rapid commercialization of the honey industry, as it has already proven a most important factor in the organization of a large co-operative company to improve honey distribution. But that is another story.

Madison, Wis.



DEAR MR. EDITOR:

We have your letters of June 2 and June 4, transmitting a complaint and a suggested article for publication in *Gleanings* in reference thereto regarding the accuracy of the honey market reports issued by this Bureau.

The person making the complaint is in direct communication with this Bureau and direct reply has been made. We do not feel that the nature of this criticism justifies public discussion of the points involved, and, therefore, the specific points mentioned may be left for settlement by direct correspondence; but it is believed that a brief description of the semi-monthly market reporting service on honey conducted by the Bureau of Markets, outlining its purposes and methods, would be timely and interesting to the readers of your journal.

The market reports on honey were started four years ago by this Bureau at the request of Dr. Phillips, the Apiculturist of the Bureau of Entomology of this Department. At that time we were organizing a nationwide market reporting service on fruits and vegetables based on the principle that those who have anything to sell need reliable information, that they should know the market conditions surrounding the sale of their products, and that of all the factors involved in the complex and intricate machinery used in the marketing of perishable products, the grower or producer is usually least informed. It was felt that the same principle applied to honey, and, therefore, instructions were issued to our various market reporters to begin the systematic and

## GOVERNMENT MARKET REPORTS

*How They Are Secured, and Why  
They Are Authentic, Dependable,  
and Wholly Impartial*

By C. W. Kitchen

Specialist in Market News, Bureau of Markets, U. S. Department of Agriculture, Washington, D. C.

[There are some beekeepers in the country who have not understood how the government market reports are secured. One of our readers not understanding all the facts in the case complained that the government figures were incorrect for his section of country. We sent his letter on to the Bureau of Markets, suggesting that they reply, and the following is a general statement, not a specific reply, giving the history of how these reports were first started and how the information is obtained. There could be absolutely nothing more impartial and unbiased. That the reports may be incorrect at times for some localities is possibly true. The Bureau of Markets is always ready to receive helpful criticisms and any suggestions that will help the beekeepers of the country generally in getting correct information from all important centers of the country. Every honey producer and all others who have honey and wax to sell will be glad to read this.—Ed.]

of each month. More than 2000 people are now receiving them direct from our office and the information is widely quoted. The information is of two classes, one including prices and conditions in producing areas, and the other comprising quotations and a statement of general conditions in the large city markets. The latter class of information is collected by representatives in charge of our branch offices in the respective cities by regular inquiry of the receivers of honey and bee products. Our representatives are salaried men who devote their entire time to the work of this Bureau and, therefore, in no way can their figures be interpreted as biased or colored to correspond with personal opinions or the advancement of personal interests. If errors occur (a reasonable percentage may be expected in any reporting service, official or unofficial), they are due to the receipt of misinformation without detection on our part or mechanical or clerical mistakes in handling it.

The quotations from the city markets represent prices paid by jobbers, wholesale confectioners, bakers, and bottlers. Reports are received from Boston, Chicago, Cleveland, Denver, Kansas City, Minneapolis,

regular collection of price information on honey market conditions, which information was to be published semi-monthly. We were informed that prior to the inauguration of our service no reliable or authentic information on honey market conditions was available to the beekeeper.

The market reports on honey which now include information on beeswax are published on the 1st and 15th

New York, Philadelphia, and St. Louis. The arrivals of honey, as well as a statement of prevailing market conditions and quotations, are shown in detail for each market. Our representatives and our correspondents are urged to limit their price figures to those representing actual sales, and when a record of actual sales cannot be given to report asking prices and designate them as such.

The information concerning prices and conditions prevailing in important producing areas is compiled by an extensive system of correspondence with a large number of producers and honey-shipping associations. By a careful comparison of quotations secured from the different sources, it is possible to maintain an accurate and dependable price-reporting service which should be of great value to producers and shippers.

Our report also includes official import and export statistics obtained from the U. S. Bureau of Foreign and Domestic Commerce, as well as reports of estimated production released by the Bureau of Crop Estimates of this Department.

Since this service was started few complaints have been received. On the other hand, the service has been frequently commended by beekeepers, individually and collectively. We believe that a wide dissemination of reliable market information has a salutary effect upon the trade not only in honey but for other products by making it more difficult for the unscrupulous receiver to yield to the temptation to render incomplete or incorrect returns and by discouraging the circulation of fictitious reports of market conditions. It is believed the publication of facts will stimulate healthy competition, discourage unfair and wasteful practices, and in so doing go far to improve the ethics of our marketing methods.

Our only purpose in this work is to pub-

lish information that is authentic, dependable, and wholly impartial. We may be justly criticised for mistakes in collecting, compiling, and interpreting the information received and will take all possible steps to correct them when discovered. On the other hand we believe we are entitled to the full and whole-hearted co-operation from the industry in placing at our disposal the complete facts regarding the market situation so that the whole industry may be benefited thereby.

During periods of market depression, such as we are now witnessing, a market reporter finds the job of collecting and compiling a comprehensive report of a large market a difficult task. In the case of New York City our reporter interviews at least 20 of the responsible receivers. Their quotations and statements are noted, and when all received a composite statement is prepared. This statement is further compared and checked in the Washington office before being released. Generally speaking no complaint can be made of the co-operation received, but a few instances have arisen whereby co-operation has been entirely withheld. You have no doubt noticed that our honey report has carried a statement for weeks from one of the most important honey markets in the United States that no information can be published concerning that market because of the refusal of the receivers to furnish the information desired.

We wish to take this opportunity to express our appreciation to you and everyone else who has co-operated in placing the service on its present basis. Constructive suggestions for its improvement are welcomed and will be accepted in so far as our facilities and methods will permit. You are at liberty to publish the contents of this letter if you see fit to do so.

#### Taking Extracted Honey.—Continued from p. 413.

facilitates pumping and clarifying. The steam generator is in the honey-room where its surplus heat also assists clarifying the honey, thus being beneficial instead of a nuisance as it would be if in the room where the men are working. So we have the advantage of a capping melter and steam-heated knives without the discomfort of artificial heat, or fumes from an oil stove. Store tanks are of about 2500 pounds capacity. We prefer this size to larger ones, as we never add more honey to a tank which has been partly filled and left over night. We fill one or two tanks daily according to how things go. The slowest part of the outfit is the eight-frame extractor. This year with increased extractor capacity we hope to do more in a day.

In the production of extracted honey the quality of the product is the first consideration. I do not mean necessarily color. Al-

together too much stress has been placed on color, or absence of color, simply because flavor is more difficult to standardize. It is unwise to educate the public to look for water-white honey, and equally unwise to teach the difference between numerous minor sources. I have seen an old-fashioned beekeeper lead his customer around a row of cans with a spoon, saying, "Now this is fruit bloom, this is clover, this is linden, this is thistle, this is fall flowers; which would you like?" The prospect tastes one after the other and looks confused because he cannot tell much difference; or, if he can distinguish flavors, he likes one about as well as another. If he does decide that he likes one better, the chances are he is dissatisfied next time because there is no more of that particular flavor. Is it not better to strive for a uniformly good blended flavor with light color and rich well-ripened quality?

Georgetown, Ont.





## TREATING AMERICAN FOUL BROOD

### Advantages of Destroying Diseased Colonies at the Close of the Honey Flow

American foul brood is a disease which I am satisfied will always remain with us. The fact that we have no control over the places our bees visit, or the places wild bees house themselves, helps to confirm this belief. This being the case, it seems to me that we must find some better system of handling the disease than that now in use. The treatment now generally used has many grave faults.

While employed by the State of Ohio as an apiary inspector I found that very few were making a real success of treating disease by the shaking method. I also found that I was not 100 per cent successful when following the treatment I was advising beekeepers to use. It is true that in a large percentage of the cases I was successful, but I failed in enough cases to condemn the treatment as far as I was concerned.

When we become very familiar with American foul brood we find it is quite regular in its habits. We can depend on just what it is going to do, and about how long it will take to do it. This allows us to handle it in a way that is impossible with European foul brood. Every beekeeper of my acquaintance who has had much American foul brood to contend with and who has made a fair success in handling it, now has no fear of it. The thing that bothers him most is the extra work it makes, and the fact that the shaking treatment cuts down his crop. I probably should state that I am considering this from the extracted-honey producer's standpoint only.

Few commercial beekeepers have the time to spare during their surplus honey flow to give to the treatment of disease. This being the case, I began to consider other plans to control this disease, and after talking with many beekeepers about it I finally decided on the following treatment:

I first built a small building to be used as a honey-house for diseased colonies. In it I installed a separate extracting outfit. All combs and equipment for use on diseased colonies are stored in this building. On my spring examinations I mark all diseased colonies and usually leave them alone until the clover honey flow. About the second week of the honey flow I cage the queens in these colonies. On about the seventh day after caging queens I destroy the queen-cells. Supers are then supplied as needed until the honey flow is over when the honey is removed by means of the escape-board. The colony is then destroyed, and its hive is taken to the disease house.

This is done in the evening. By caging the queen instead of killing her the colony will probably be more contented and work better. But the great value of caging instead of killing the queen is that, as long as a queen is in the colony, fertile workers will not develop.

I have saved many colonies after having run them for honey by shaking them into an empty hive after the honey flow was entirely over, leaving them in the empty hive three or four days and then supplying them with a full set of combs, a young laying queen, and plenty of food. This works well if the colony is still strong, but I consider that the bees are not worth the trouble for reasons already given.

Colonies operated by this plan give a larger average than queen-right colonies of the same strength. I presume it is because of the fact that they had no brood to feed and nearly all bees can go to the field. All colonies that develop disease after the clover flow are destroyed. Our fall flow is never good enough to treat these colonies if we desired to. And to treat them and feed enough to put them in a condition that would insure first-class colonies for the next season would cost more than they would be worth.

Disease has cost American beekeepers a large amount of money. But I feel sure that it has made us enough better beekeepers nearly to balance the account, if not more. A beekeeper that survives attacks of either American or European foul brood is pretty certain to be a better beekeeper because of his experience.

To make good my numbers I make increase during the honey flow to replace these destroyed colonies. It is rather easy for a large beekeeper to make all the increase he desires. In fact many have trouble holding their increase down. This being the case, what good reason is there for saving diseased colonies? There is no doubt but that much disease is scattered by the treatment some are giving. When our numbers are made good by making increase we can be reasonably certain that these are healthy.

Weston, Ohio.

A. C. Ames.

## INTRODUCING VALUABLE QUEENS

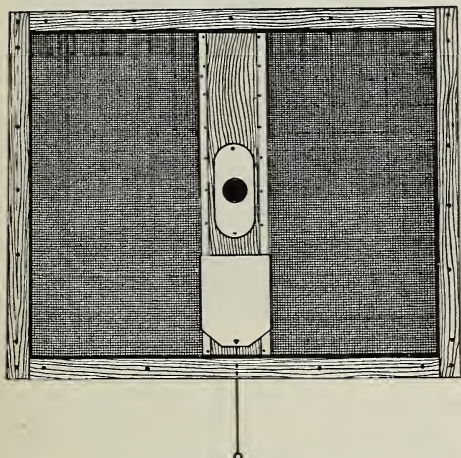
### A New Method for Introducing; Making Increase, and Uniting Weak Colonies

Here is something that has caught on with a number of prominent beekeepers here for the purposes outlined above. It has been well tried out for two seasons and has proved very successful here. I have used it in my own apiary with 100 per cent suc-

## FROM THE FIELD OF EXPERIENCE

cess, and, as there is no patent on it, I pass it on for the benefit of any beekeeper who has had difficulty in getting queens accepted.

The idea is simply a ventilated super clearer with the addition of two tin hive-rabbit strips tacked on the sides of the wooden center piece to make a runway for a tin slide that is worked with a wire thru a small hole in the side of the frame from the outside. The whole cost of the appara-



Ventilated escape-board arranged for introducing queens or uniting colonies.

tus is less than the price of a good queen, and the risk of requeening is reduced to practically nothing. To requeen, first kill the old queen. Then raise two frames of emerging brood from the brood-chamber, replacing with empty combs. Put on the improved super clearer, take out the Porter bee-escape, and close the tin slide over the hole. Over this place an empty deep super and put in the two frames of emerging brood after first shaking off every adhering bee. Put a partly filled frame of honey on each side of the emerging brood, release the new queen at once on the four combs, and cover with a clean sack. The sack goes over the four frames, down the sides, and spreads over the space on either side of the screen below so as to confine the heat of the colony below the screen to the four frames above. Very little brood is lost, and the emerging bees take care of the new queen at once, so that she soon starts laying in the cells from which the young bees are emerging. In two or three days the tin slide is drawn quietly by pulling the wire from the outside and there is no disturbance to cause the balling of the queen. The bees below come up and mingle with the laying queen, which is invariably an accepted queen. A few days later the screen can be taken

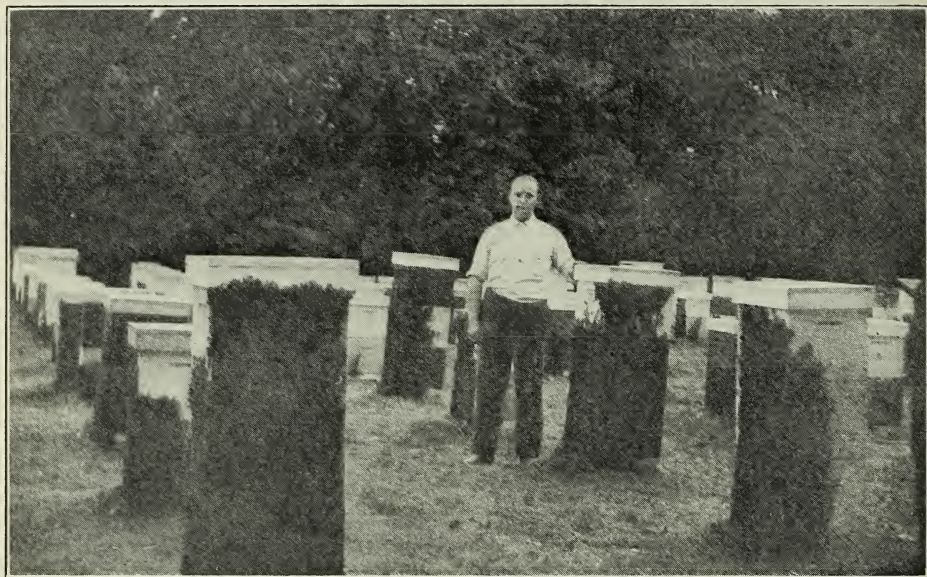
away, and the brood packed down below if necessary.

For making increase from nuclei the same procedure is adopted except that the old queen below is left there and the tin slide is kept closed; but a small opening is made in the rear of the screen frame by making a saw-cut in the upper edge of the frame, cutting out a piece about 2 inches wide and  $\frac{3}{8}$  inch deep. This piece can be fitted with a small hinge so that it makes a small alighting-board when open. Increase can be made at little cost in this way without any sacrifice of the field force, by taking the emerging brood at the start of the honey flow when it is of least value. The heat arising thru the screen helps the nucleus to build up rapidly, and additional frames are added as it gains in strength until the hive-body is full. It is then moved off the original colony and place don a clean bottom-board and gradually turned around every day a little until the entrance faces the right way. Last year I started a nucleus in this way above a strong colony as late as September with two frames of emerging brood and eight frames of honey. Before frost there were four frames of new brood, plenty of young bees, and sufficient stores left for winter. Early this spring when I separated them I had to make more room for the queen by putting on a second brood-chamber, and now they are storing surplus rapidly. All this cost me was two frames of emerging brood, a new queen, and stores for winter. The colony below appeared to benefit also, as it came thru as powerful as any other in the yard. Of course, this winter increase was made in our mild Pacific coast climate where we get more rain than snow during the winter, and both colony and nucleus were protected in the Kootenay hive case.

The small opening from the screen frame was connected thru an inch hole bored in the side of the hive case with a 3-inch tube of birch bark rolled up like a cylinder and flattened at one end. It would hardly be possible to make winter increase in this way in a very cold climate, but it might be tried at that. W. H. Turnbull, a very successful beekeeper here, has used this plan for two seasons, and he claims he can make increase in this way any month in the year that he can obtain queens from the South and has emerging brood to give them. I have seen several of his two-frame nuclei built up into strong colonies during the winter equally as well as mine. The screen can be used for several other purposes, such as uniting weak colonies, etc. As a winter cover over the brood-frames it gives the bees access to stores by providing a space over the top-bars. It supports the packing on top and allows the moisture to pass thru. (Galvanized screen would be better for this



## FROM THE FIELD OF EXPERIENCE



Stahlman's record breakers at Knox, New York (1911). No room for field bees inside the hive during the night, so they sit outside where it is cool until time to go to the fields next day.

on account of rusting.) It makes a feeding-board for a perforated can of syrup placed over the hole, and with the Porter bee-escape serves its original purpose of a super clearer. Perhaps other beekeepers may find other uses for it; but this is plenty for me, and I would not be without several of them for a great deal. A. W. Finlay.

Huntingdon, B. C., Can.



### LOCATION OR MANAGEMENT

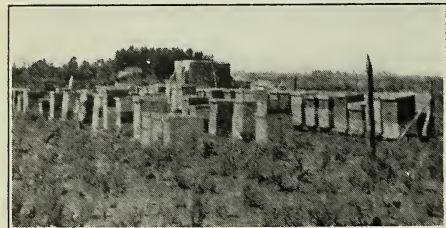
#### Many Good Locations Condemned as Poor Because of Faulty Management

I am sending some photos to show what has been done in my beekeeping career. Some will say that I must have a cracker-jack good location, but let me stop those statements right now. I say that thousands of locations are as good or better. My bee-

keeping has been from New York to California, and I have also seen beekeeping outside of the United States. Many beekeepers get the idea that the grass is greener on yonder hill than at home. They should not get excited at seeing a few extra



Some more record breakers in comb honey production. This time in Nevada (1914). Same beekeeper—same kind of crops.



One of D. C. Stahlman's apiaries in Idaho. Record-breakers in 1920.

blossoms beyond the reach of their own bees. Watch your colonies, and the rest will take care of itself. Now, I don't mean to say that any place is an ideal place for bees; but I am safe in saying that 50 per cent of the number of pounds produced is



## FROM THE FIELD OF EXPERIENCE



up to the beekeeper, and not to the location. The photos shown are bees owned by myself and cared for by myself only. I use only standard-made hives, ten-frame, all alike, and full sheets of foundation.

I have spent thousands of dollars for my experience, but am not sorry I did so, for now I am satisfied that the grass is as green at other places as where I am located. It is up to the beekeeper.

Buhl, Idaho.

D. C. Stahlman.



### DEVELOPMENT OF WORKER BEES

#### Favorable Conditions Shorten Period of Development Nearly Two Days

It is usually said that 21 days are needed for the development of worker bees. This is a mistake, scientifically speaking, altho it is correct enough for practicable purposes.

A friend and I have made close observations of this development, and we have found out that it comes in shorter periods than commonly given. Some years ago I examined my colonies which were headed by young queens that had commenced laying eggs only 19 or 20 days before, and I saw some emerging bees. This case, of course, is not very definite.

On May 20, 1916, at 9 a. m., I hived a swarm of Italians headed by a fertile queen in a hive containing empty combs. Then on June 8 at 3:30 p. m., I examined a frame in the center of the hive, and found about 20 worker bees; so only 19 days and 6½ hours made up the entire period of development.

On April 27, 1917, at 9:30 a. m., Mr. Yoshizato inserted an empty comb into a hive of Carniolan bees. At 6:30 p. m., on the same day, just nine hours after, he counted 309 eggs in both sides of the comb, when he took it out, brushed away the bees, and gave it to a colony of Italians. By noon on May 17, 47 bees had emerged. Thus 19 days and 17½ hours elapsed from the laying of the eggs, assuming that the eggs were laid at the very time of the taking out of the frame. By 6:30 p. m., the same day (20 days after the laying of the eggs), 191 bees had emerged. In this time there were five or six Italian bees that had emerged from this same frame. By 9 a. m. of May 18, that is, 20 days and 14½ hours after the laying of the eggs, 66 more bees had emerged, thus making a total of 257. After this time he found no more Carniolan bees emerging.

In this observation it seems certain that, in the case of 74 per cent of all emerged bees, only 20 days elapsed for their development, and that in the period of 20 days and 14½ hours all the bees emerged.

On April 28 at 9 a. m., Mr. Yoshizato gave an empty frame to a colony of Carniolans. At 5 p. m. (eight hours after), there were 293 eggs in both sides of the frame. Then he gave the frame to an Italian colony. On May 18 at 10 a. m. (19 days, 17 hours after the laying of the eggs), there were 169 emerged Carniolan bees, and some Italians were emerging from this same frame. On the 19th at 8 a. m. (20 days, 15 hours after the laying of the eggs), 71 more emerged bees were counted, making a total of 240. After this time, no Carniolans emerged. In this observation 70 per cent of all emerged bees used 19 days and 17 hours, and the whole number used 20 days and 15 hours.

On May 12 at 2 p. m., Mr. Yoshizato hived a swarm in a hive containing frames of foundation. The next afternoon at 4 o'clock upon examining the hive, he found a frame with 233 eggs. On June 1 at 7 p. m. (19 days, three hours after), two bees had emerged. By June 2 at 6 p. m. (20 days and two hours after), 225 more bees had emerged. So, in the period of 20 days and two hours 97 per cent of the bees had emerged.

On May 19 at 2 p. m., Mr. Yoshizato hived a swarm in a hive which was supplied with some empty combs, and on the 20th at 8 a. m., one side of a frame had 611 eggs. By June 8 at 9 a. m. (19 days, one hour after), 36 bees had emerged. By noon of the same day (19 days, four hours after), 30 more bees emerged; by 7 p. m. of the same day (19 days, 11 hours after), 68 more. On the 9th at 8 a. m. 492 emerged bees were counted, making a total of 626. (Fifteen bees or eggs must have been overlooked by Mr. Yoshizato, unless the excess in bees is from eggs which were laid after the first counting of eggs.) All the bees emerged in the period of 20 days.

On May 21 at noon, Mr. Yoshizato gave an empty comb to an Italian colony, and on the same day at 4 p. m., he counted 135 eggs; he then gave the frame to a Carniolan colony. On June 10 at 4 p. m. (full 20 days after), 124 Italian bees were in the hive. After this time there was no emerging of Italians.

From these observations, Mr. Yoshizato asserts that the period of development of worker bees should be correctly stated as 20 days, because three-fourths emerge in this period.

The A B C & X Y Z says in regard to emerging: "This will be in about 21 days from the time the eggs were laid, or it may be 20, if the weather is very favorable." Then, I am sure, we may say, it may be 19 days, six and one-half hours, or 19 days, three hours, even 19 days, one hour, if the weather is very favorable.

Yasuo Hiratsuka.

Tara, Gifu-ken, Japan.



## BOX-HIVE

beekeepers are funny things," says Edwin J. Dahlquist, on page 368 of June Gleanings, and the queerest thing about them is that they, or many of them, don't want to be anything else.

I like Mrs. Boyden's articles very much; but, dear me! they make me discontented and restless, and wish that I too might travel to the ends of the earth.

That formula given by Prof. J. H. Diebel (page 363) for the prevention of bee stings is certainly unique, and good to hand out to our lady friends who wish to visit our home yard just to see how it looks.

We get some rather choice new phrases in the June number of Gleanings in Bee Culture. Mr. Demuth tells us of the "spirit of the hive;" Mr. Pettit of "balky colonies" and a "take-out" colony; while Mr. Greiner asks us to save the "wax diamonds."

Beekeeping can hardly be called an exact science. A large knowledge of the habits and instincts of bees, as well as their variations under different conditions, is necessary to successful management, and yet, to secure the best results, much will depend on the good judgment of the beekeeper as to the best way to treat each colony.

That method of getting bulk honey, described by Dr. Parker (page 351), seems to be new and a good way to dispose of abnormally thick combs. The product must be fine, if it does not granulate; and yet I believe, as a rule, it will be found less work to keep our bees on the line of "normalcy" than to spend our time in cutting down double-thick combs.

What is the "spirit of the hive?" This is more easily asked than answered or recognized. We must become so well acquainted with our bees by association with them that we recognize their various moods and actions as well as we do those of the people with whom we associate. We must remain novices in the business of beekeeping until we can catch the "spirit of the hive."

Mr. Demuth informs the readers of Gleanings (page 365): "The two important factors in the eradication of European foul brood are a good strain of Italian bees and strong colonies, that is, strong in the spring." These cannot be too strongly emphasized or too often repeated. But while

## SIFTINGS

J. E. Crane

these rules are followed or while we are trying to follow them, we may frequently find a queen whose workers fail to "clean up."

Such a queen should be treated as the blacks, and replaced by another.

A. C. Gilbert (page 362) advises giving a new colony a frame or two of empty comb with frames of foundation in order to prevent bees storing pollen in sections. This is good advice; for it not only prevents the bees from storing pollen in sections but often keeps them from deserting the hive, as they will sometimes do if hived on frames of foundation only.

Jay Smith gives on page 349 as good a method of rearing choice queens as there is, and one of the simplest for introducing. If your queen-cells are of just the right age when introduced you may have in 36 hours a choice young queen in the place of an old one. If this work is done three weeks before the close of the honey flow, there will be no loss of surplus honey. Indeed, there may be more; for there will be a week or ten days in which no brood is to be fed, and a young queen will stimulate honey-gathering. It will also check any disposition to swarm if done early in the season.

G. A. Barbisch (page 368) has my sympathy for the loss of his bees by the spraying of near-by apple trees. It is one of the questions that must be worked out in some sections, or the keeping of bees must be given up. I believe a different attitude must be taken by some of our agricultural colleges on this subject. Some years ago I lost heavily from this cause. Relating my experience at a gathering of beekeepers, a professor, who had charge of the interests of beekeepers, expressed very serious doubts as to spraying ever killing bees. I have wished he might have got his notions from a yard of his own rather than from books or the laboratory.

L. L. Andrews (page 358) informs us of the poor flow of honey in southern California. Misery is said to love company; and we have at present a poor outlook for a crop of honey here in Vermont. The season has been unusually early. Very little rain fell during May; alsike clover bloomed June first while but a few inches high; white clover is blooming but little on account of drouth. If these fail we have little else to look to for surplus. It is an interesting fact that we rarely or never get a good season for honey when we have what is called an "early spring." I have never known a good season to follow such a spring.

## EVERYONE

who takes up beekeeping for a sideline must wish, in a certain spirit of sturdy curiosity, to learn something of bee anatomy, of the hidden intricacies of his pets, of the way the little bodies do what they do. And in the end, after having studied these things, he is led thru the cool precision of the scientific investigators to deep truths, to marvels and mysteries and a glimpse of endless processes; till the new knowledge lifts his heart, even as poetry and beauty have lifted it, to high places of reverent wonder; provided, that is, that he learn with his heart and spirit as well as with his head. For the folding down of an array of exact facts into few words is a prosy and uninspiring affair; only a warm appreciation finds the divineness within.

Even the most careless observer knows that the striped brownish little bee body is made of a head, a thorax, and an abdomen. But has the careless observer, who is often a careless thinker, too, realized that the little three-sectioned body has no skeleton on which to hang its effective muscles—but rather a hard outer cover to protect them? And has he a clear-cut realization of what inner organs and outer appendages each part bears? And that the systems concerned with digestion, nerves, circulation, and respiration run thru them all?

### The Head of the Bee.

The head is triangular. On the top are three simple eyes set in a triangle and at the sides are two compound eyes, so large that they round out the face and, in drones, meet at the top of the head and force the three small eyes down on the face near where the delicate antennae are attached. Down at the lower part are the mouth, leading to the oesophagus, and the various mouth parts—mandibles that move sidewise only, and the proboscis with its strange complex parts that fold up out of the way when not needed to take up liquid food thru a central hairy tube with a tiny groove on its under side. The brain is above the oesophagus. Then there are glands, salivary glands and those other mysterious ones that go on quietly functioning in their own effective way, while microscopes and chemists and printing presses argue over their use. Do these glands secrete the food fed by the workers to the larvae (they do, declares one group) or does the larval food come from the stomach of the workers (thus, insists another group)? It's the war of the Glands against the Ventriculus, and no armistice yet, no victory for either—the right now the gland supporters seem pressing the enemy into a hotly-contested re-



treat. Meanwhile, how well the larvae are being fed!

### The Thorax.

Thru the interior of the thorax on into the abdomen the oesophagus runs

its straight and narrow way; there are nerves and air-sacs and blood; and on the outside are legs and wings and the mighty muscles that propel them. In the larval stage the wings are mere thin little sacs; then the sides grow together, the blood goes back into the body and behold, the sacs become dry membranes—two pairs of them, the fore ones large, with powerful flight muscles, the hind ones small, hooked to the edge of the ones in front and moved by them. In four directions they move, up and down, forward and back. Strangely enough, the flight muscles primarily change the shape of the thorax, thus raising and lowering the wings. (Yet, in spite of being dry membranes with strange great muscles, wings are forever wings!)

As for the six legs, always when bees go walking, moving two legs on one side and one on the other, they have three legs left to stand on, a goodly number indeed. All these legs have claws at the ends, and between the claws is a sticky little pad to use when walking on smooth surfaces, on the sides of things or upside down. The legs carry wonderful sets of tools: the front legs have an apparatus to clean the antennae; the middle ones an impressive-looking spur to pry pollen off the hind leg; and the hind leg itself the pollen baskets, besides other handy appliances. Each leg also has a pollen brush. The front brushes take the pollen from the head and mouth; the second ones take it from the first and also from the thorax; the third pair take it from the second and also from the abdomen, and then they pat it and push it and pack it into the pollen baskets and bring it home.

### The Abdomen.

The abdomen shows six segments plainly, even to those who are quite unaware that the head is made of several larval segments grown together, and that the thorax, not content with the three that merged to make it, has coolly annexed one abdominal segment, and that the abdomen itself has four or five invisible ones modestly tucked out of sight at the tip. The segments have movable plates over and under them; on the last four of these lower plates of the workers appear the tiny drops of wax secreted by the wax glands.

Within the abdomen are the same four great systems found in the head and thorax, the nervous system and those of digestion, circulation, and respiration. Here are also



the organs of reproduction and, except in the drone, the sting.

The average beekeeper knows more about the much-discussed reproductive organs, and the sting, than about these other major systems. He usually knows that the act of mating (which causes the death of the drone) stores millions of spermatozoa in a small sac in the body of the queen, where they may live for years; that the egg, starting on its way from the small forward end of the ovary, passes on thru the oviduct to where (at the will of the queen?) it comes in contact with a generous number of spermatozoa, one of which enters and fertilizes it—or it is allowed to pass on unfertilized; that the eggs thus fertilized produce females (either workers or queens, according to the larval feeding), while those not fertilized produce drones. (Another war of the giants rages around this point—are all eggs male until fertilization, which act changes them to female, or are some male and some female, the latter requiring fertilization to develop, and the former not requiring it?)

Perhaps the inner workings of the sting are not so well known—how one poison gland secretes an acid solution and another an alkaline, both being emptied into the poison sac—or how the lancets and other parts move within the mechanism of the sheath. But beekeepers generally know (rather well) that tiny barbs prevent the bee from drawing the sting back, once it has entered the flesh, and that when she pulls herself away, torn often to the point of death, the machinery of the sting keeps right on working, going in deeper and pumping the poison in. They know, too, that it is not wise to squeeze the poison sac when removing the sting. Wherefore they scrape it off rather than pull it out.

#### The Nervous System.

Less familiar, yet not less wonderful, is the nervous system of the bee. It consists chiefly of a series of masses of nerve cells. This series runs lengthwise and is connected by two long parallel cords, really extensions of the nerve cells, which also send out countless fine delicate fibers into all parts of the body. These carry what may be called both incoming messages, from the sense organs, and outgoing messages from the nerve centers to every organ in the body. Each nerve mass (known as a ganglion) serves a definite territory. The brain, which is three ganglia fused together, spreads out on each side into an optic lobe which gives it direct connection with the compound eyes; it sends nerves to the antennae and to the two other head ganglia, one of which in turn sends nerves to the mouth parts. The first ganglion in the thorax sends its nerves to the first pair of legs, while the other (being four fused into one) serves the rest of the thorax, the wings and remaining legs, the abdominal

segment of the thorax and even, as the being compensatingly generous, the first segment of the abdomen itself. There the remaining segments are served by the five abdominal ganglia.

#### Sense Organs.

The sense organs consist of specialized nerve cells. There are many of these on the antennae, covered over with the hard outer covering, that are as yet unidentified. No one who has worked with bees will question their sensitiveness to touch, and doubtless some of these antennal organs function that way. But very little has yet been actually established as to this sense. Likewise very little is known of the senses of taste and hearing. Do bees taste? Can they hear? Who knows? No definite organs of either hearing or taste have yet been identified, tho certain sense cells of the mouth parts may well be those of taste.

It is different when it comes to smell. Beekeepers have long regarded odor as having a direct and practical bearing on bee behavior. By odor, it has been assumed, they distinguish between family and strangers. For a long time the olfactory organs were speculatively located in many different places, chiefly on the antennae, tho it has now been shown that with the antennae removed bees still react to odor. Recently both structural and experimental proof has pretty well established that 21 different groups of olfactory pores lie along the bases of the wings and on the legs and sting. In these organs the nerve cells send a nerve fiber to the surface of the body thru a pore aperture, where the very protoplasm of the fiber, with no hard covering over it, lies open to receive impressions.

Then there are also scent-producing organs, on a membrane between the 6th and 7th upper plates of the abdomen of the workers and queens. All observing beekeepers have noticed how bees raise the abdomen when thrown in front of their hives or when being hived after swarming. This attitude is explained by the location and operation of these scent-producing organs, the odor given off being supposed to act as a guide to their companions.

Every beekeeper knows the organs of sight. But no human being knows how things look to a creature who has three simple eyes and two compound ones. The relation between these eyes in the matter of vision is not understood. The compound eye is made up of a multitude of long slender parts reaching from the outer surface to the optic lobe of the brain. Each part has a lense, a crystalline cone, and a long transparent center with sense cells around it. There is no way to change the focus of the lens. How do things look to bees?

#### The Digestive System.

The food of the bee enters the body by the mouth and passes on in thru the oesophagus.

gus. In the abdomen the oesophagus enlarges into the honey-stomach, in which nectar is carried. Then comes the true stomach, known as the ventriculus, separated from the honey-stomach by a gate-like valve which opens only to let the food into the stomach; otherwise it is closed to keep the nectar separate from the stomach content. (Unless, indeed, the larval food does come from the stomach instead of from the head glands, in which case this valve, the proventriculus, passes forward unopened thru the honey-stomach till it reaches the oesophagus, where it opens to permit the stomach to send back its partly digested contents.) The other end of the stomach joins the intestine, and just here about a hundred tiny tubes enter the alimentary canal. These carry into the intestine such waste materials from the worn-out tissue cells of the body as cannot pass off in gaseous form.

Probably the invert sugar of honey, the levulose and dextrose, is immediately absorbed into the blood from the stomach; the further digestive processes required by pollen and the other elements in honey take place in the intestine, where these foods are finally so changed that they can pass thru the alimentary walls into the blood to be carried to the body tissues.

#### Circulation.

The blood of bees, which is colorless, is not confined in blood vessels, but fills up all the space in the body between and around the organs. There are diaphragms, however, stretched along in various places, pulsing walls of membrane that hold the blood in somewhat definite channels, and by their rhythmic motions help keep it circulating. The heart is a long muscular tube

lying along the upper part of the abdomen, with four chambers, and valves that let the blood in and other valves that keep it going the right way. The back end of the heart is closed, but the front opens into a long tube that carries the blood thru the thorax into the head. From the head it returns to the cavities of the thorax and on into those of the abdomen, flows around the abdominal organs, takes up the food thru the alimentary walls, and goes up into the heart again, carrying nourishment with it.

And every cell in every organ in the body chooses from the blood what food elements it needs to rebuild itself, that it may go on functioning in its own way.

#### Respiration.

The air needed by the bee enters the body by side openings called spiracles, two pairs on the outer walls of the thorax and eight pairs on the abdomen. It is pumped thru the body by respiratory movements which, lengthening and shortening the abdomen, open and close the spiracles. These connect directly with great air-sacs having delicate walls and a great number of branches that go all over the body. Thru these walls, of both sacs and branching tubes, the oxygen passes directly into the blood, which gives it to the body tissues.

And every cell in the body takes from the blood as much oxygen as it needs to burn up its waste materials, sends the heavier residue to the intestine thru the hundred little tubes, and gives the rest as water vapor and carbon dioxid back to the blood, where it passes thru the trachean walls into the air-sacs and tubes, and finally, thru the spiracles, out of the body into the outer air.



## FROM NORTH, EAST, WEST AND SOUTH



**In Northern California.** In our central coast counties we have a considerable amount of black sage, which extends inland as far as the San Joaquin Valley. In places there is an abundance of sage right on the water's edge where fogs and cool winds are the rule almost entirely during the blooming period. Sage located thus secretes nectar, but not in as great quantities as that several miles inland. All sage in the immediate coast foothills is visited by considerable fog, especially during the morning hours, and it is this fog, more than any other factor, that lengthens the life of the plant, thus prolonging its blooming period. Apparently fog does not interfere with nectar secretion, and I was glad to learn that A. E. Lusher of Pomona had made the same statement in June Gleanings. In localities visited by fog

the flow extends over a comparatively long period; but, on territory further inland where fog does not reach, the flow is of shorter duration and more intense. May and June rains, of course, prolong and greatly increase the flow of nectar. The sage flow decreases and is finally shut off during May, June, or July, according to location, owing to lack of moisture. Hot weather during these months causes this lack of moisture, and the decrease in secretion is more or less gradual. Our sage is not visited by hot desert winds, drying it out over night, as it were, and perhaps it is for this reason more than any other that sage crop failure is unheard of in this section.

Last week in one of our plants we tried out the new eight-frame Buckeye power extractor, and are more than favorably im-





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pressed with the way in which it worked. What pleased us most was that combs, filled with capped sage honey, built on foundation given the bees this spring, were lifted from the baskets with the cell walls of the combs absolutely intact. After the day's extracting there was not a particle of comb adhering to the baskets. This statement in itself means a very great deal. Furthermore, combs are extracted cleaner and in less time than with the older-model power extractors. So far we have not detected any bad features and our only criticism (this applies to all power extractors using attached pump) is that there should be a screen over the inside of the outlet of the extractor to prevent chips from frames, etc., from being forced thru the pump.

A resumption of short courses in beekeeping, conducted by the University of California and the U. S. Department of Agriculture, will take place at Berkeley during the first two weeks of December. This is good news. Later, we will give you more particulars regarding these courses of instruction, which mean more to beekeepers than anything else. If any are skeptical, they should attend the courses and then judge for themselves. M. C. Richter.

Big Sur, Calif.

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### In Southern California.---Weather conditions

such as southern California has not experienced in the last 12 or 15 years have prevailed for a month past. The days have been cloudy and cold, with many days of light rain, making the rainfall for May the greatest of any May record. This unfavorable weather cut the orange honey to one of our lowest yields. Ten pounds per colony as an average for all colonies brought to the groves seems to be a fair estimate. The later sources of honey, such as the buckwheat and white sage, are still uncertain; but it is hoped that the late rains will help to increase the honey flow so that we will, in a small way at least, make up for the shortage from the black sage and orange. Reports from the alfalfa and mesquite sections along the Colorado River delta say that beekeepers are getting a good crop. Especially is this true in the Palo Verde or Blythe section of Riverside County.

It is lamentable to see the manner in which the enthusiasm of the newly converted beekeeper rises and wanes with the seasons. During the past few years the high prices and satisfactory crops instilled into many the idea that the road of the beekeeper was all roses and easy resting places. Enthusiasm ran high and 1000 or more colonies was the ambition of many. Some did not hesitate to buy on time or to borrow money to get into the game. This season is

proving almost disastrous to some of these and discouraging to many more. Men whose ambition was thousands of colonies, now say hundreds—just enough so that they can care for them themselves and not hire help except during the extracting season. This is an ideal system and if due attention is given to the business for a term of years the returns will average with any other line of agricultural pursuits. Supposing our crop gives us a net return of \$1800. This is an average of \$150 per month. How many of our old associates are earning more than that? If we put this money into the savings bank and draw only the amount we need to live on, the balance will earn interest money. We can take good care of our business and have nearly half of our time for pleasure, recreation, improvement, study, or anything we like. At the same time our neighbor must put in six days a week, thruout the year, with the hopes of ten days or two weeks off during the summer. We wish that we might instill this great truth into the minds of our fellow beekeepers. It would bring peace and contentment to hundreds who are sure to feel, during this year, the pinch of readjustment, especially those who must not only meet the lower prices but also a partial or total failure of a crop.

Much more attention than ever before is being given to the question of the actual cost of the production of honey. Many reasons might be given for this, the principal one probably being the great advance that has been made in the last 12 or 15 years in the educational and social standing of the men and women engaged in the business of producing honey. We have reached that stage in the development of the industry where the operator is no longer looked upon as that old beekeeper, who is good for nothing but to care for a few bugs. Scholars, teachers, and professional men no longer consider it beneath their dignity to own and operate an apiary. When these classes enter any line of business, they soon want to know what the business returns for the time and ability put into it. The time was when 100 colonies of bees, placed in an out-of-the-way part of the farm and cared for at odd times, were considered an all-profit proposition. The honey was sold to the first buyer who came along, and no figures were kept as to the cost of production. Anything that brought cash was profitable, even tho father, mother and all of the children worked early and late seven days a week to produce it.

At least the large operators have recently published figures to show the cost or producing extracted honey. One company, operating about 4000 colonies, figures that on a basis of 60 pounds per colony, it costs ten



## FROM NORTH, EAST, WEST AND SOUTH



cents per pound to produce it. Another figure that in operating 500 colonies and in producing a crop of less than 70 pounds per colony and selling it at 15 cents per pound, the business would be operated at a loss. While the writer does not agree with all of these figures, many of them are getting close to the actual conditions as they have existed during the past few years. Surely much good will come of these investigations, and more and more the beekeeper of today will conduct his business on a real business basis.

The best field meet of the season of the San Bernardino and Riverside beekeepers was held on June 4 at Chaffee Junior College, Ontario. Nearly 100 beekeepers from the two counties were present. The meeting was called to order by Mr. Chan, president of the San Bernardino County Club, who gave a brief address and then introduced Mr. Peterson, Farm Advisor, who gave many good reasons why the beekeepers should join the Farm Bureau. Perhaps the most important of these was the co-operative interest created in securing county, state and national legislation along the line of county ordinances, state laws and national tariff protection. The matter of co-operating with the Farm Bureau was left to a committee of three, who will investigate the benefits to be derived. This committee consists of Will Atchley of Uplands, L. O. Hattery of East Highlands, and B. H. Stanley of Rialto.

Prof. Ralph Benton was the next speaker. He talked on bee diseases, reviewing the subject from the time of Aristotle down to the present. He referred to the slogan, "We will stamp out all bee diseases by 1925," and said that he wished that it might be true. After describing the several diseases, and noting the time since their discovery he summed the matter up by saying that no better methods have been found than the McEvoy method of treatment for American foul brood and the Alexander method for European. He recommended requeening for paralysis. He hopes to see better state laws and stricter enforcement of the same in the future. "Increasing and marketing Bees," by Will Atchley, was very well handled, and much good information and advice were given. To make increase one should get the colonies strong for the honey flow. Then take one frame of brood and the bees from two more frames and place them directly back of the parent colony. This division should be made when the parent colony has swarm-cells, one being given to each nucleus. Add a frame of foundation or combs as required, and leave on the same location until ready to ship or until the close of the honey flow.

"Queen Rearing," by Henry Perkins,

was one of the treats of the meeting. In answer to the question, "How can you tell a good queen before she has hatching bees?" Mr. Perkins said, "I would rather judge by the cell before she emerges." Natural cell-building is the best condition, as three great factors are necessary for the best success, namely, plenty of young bees, plenty of food, and proper impulse. He recommends raising cells under supersedure impulse as one of the best methods. Even a small colony will raise good cells if the balance is right.

T. O. Andrews gave a good talk on the advantages of fire protection, and urged cleaning in and around the apiary location before the bees are placed thereon.

The question of the poisoning of bees from sprayed blossoms was discussed, and the matter of spraying is to be taken up with the fruit-growers to see if a satisfactory agreement cannot be attained, so that the spraying will not be done at a time when it will injure the bees. A visit to the exhibit made by the boys of the college was much enjoyed. This consisted of bees and honey, vegetables, live stock, and agricultural products in general. A visit to the college apiary, which is fitted up with all modern appliances, was the last event on this splendid program. It was agreed that Chaffee College is an ideal place for holding a field meet. L. L. Andrews.

Corona, Calif.

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**In Texas.** The weather conditions during the month of May have been quite adverse to beekeeping. There were no violent changes in the weather; but the month, as a whole, was cold and cloudy. This was advantageous to the growth of the horsemint, but the cold, cloudy weather prohibited the bees from gathering any surplus that might have come. With the last week of the month the weather has changed for the better, and in many places quite a horsemint flow is on. If present indications hold out we may yet have a flow from mesquite.

The early spring honey crop was almost a failure. I reported last month that there was perhaps one-fourth of a huajilla honey flow, but further reports show that it is doubtful if the crop is one-tenth its normal amount. A large number of small honey flows have occurred locally from hoarhound, gaillardia, and prickley-ash; and now horsemint is giving quite a little surplus. Owing to the financial situation, it is almost impossible to make a report on the price of honey. Almost every beekeeper that has produced any honey, good or bad, is throwing it on to the market, and locally the prices have been cut to such an extent that it hardly pays for extracting. The larger





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beekeepers are holding their honey, and just as soon as these small beekeepers have marketed their crop the price will again become normal.

Dr. G. S. Fraps, of the Division of Chemistry of Experiment Station, College Station, Tex., has just issued a bulletin entitled, "The Chemical Composition of Texas Honey and Pecans." This paper gives the analysis of a large number of samples of honey from different Texas locations and flowers. Every person interested in the subject of honey and its care, should obtain one of these bulletins. This, exclusive of the government publications from the Bureau of Chemistry, is the only paper of its sort available to the public. Careful study of the tables given explains quite a number of points of interest relative to honey. Honey that granulates very quickly is very low in water content, while those that ferment have an extremely large amount of water. The locality is brought out even in chemical analysis, as the same-named honey from the eastern part of the State has a larger ash content than that over in the western part. This bulletin can be obtained from the Director of Experiment Station, College Station, Texas.

R. R. Reppert, Extension Entomologist, and Don G. Griswold, County Demonstration Agent of Denton County, made an extensive campaign for better beekeeping in that county May 5, 6, 7. The first two days were spent in visiting the beekeepers of the county, and on the last day a number of demonstrations were given, including transferring, working the hive, and properly distributing brood. At the same time, a county beekeepers association was perfected. There is no class of extension work for which there is greater demand and which give better results than the work done in beekeeping. The only trouble in Texas is that there are too few men who are in a position to do this work.

Thruout quite a considerable extent of territory south and east of San Antonio an adult bee disease has put in its appearance within the past two weeks. It has been very severe in some apiaries, and in one case the loss of 100 colonies was reported. This trouble, like all of the others of similar kind, is called by the beekeepers paralysis or disappearing disease. The trouble undoubtedly is a form of indigestion, and conditions in the field indicate that it must be caused by the bees living entirely upon the pollen and nectar from the spring-blooming flowers. The nectar from these plants produces a dark-amber heavy honey which is high in ash content. Because of the similarity in chemical composition between this nectar and that of honeydew honey, it is quite probable that there is a close relationship between

this disease and the one which affects bees that are fed on aphid honey. The feeding of sugar syrup to the bees has been recommended, and where the colonies had not already been depleted a very marked improvement has been noted; but where the majority of the old bees had died the remaining were not able to save the brood, even when fed syrup.

A very peculiar and serious occurrence happened the first of this month when the S. P. Railroad sprayed its roadbed with an arsenic solution to kill weeds. This railroad runs thru the heart of the beekeeping section of Texas, and quite a number of apiaries are located very close to its right of way. In one instance one man lost almost the entire adult population of a 50-colony apiary. Just why the bees would collect the poison liquid as it lay on the railroad rails and ties, is hard to understand, but they did. One apiary, which was within 200 feet of the railroad, was almost wiped out; another one, a trifle farther away, did not lose so many bees; and those a quarter of a mile from the track were hardly affected. It was a very peculiar sight to see a hive having brood enough for 50,000 bees, containing only a queen and perhaps 200 adult bees. A rain came a few days after the poison was put on, and no trouble has been reported since.

San Antonio, Tex.

H. B. Parks.

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**In North Carolina.**—This State has not in years experienced so short a honey yield as this promises to be, especially in the eastern half of the State. Two heavy frosts about the middle of April, the second one accompanied by a freeze, literally killed the early bloom and young twigs on most of the wild honey-bearing trees and shrubs, leaving only a limited pasturage in the more protected and widely scattered places. Now the hot weather is coming on apace, and there is very little secretion of nectar on hot nights. Beekeepers are hoping for a good fall flow, but this will little more than enable the bees to lay by stores for the winter.

The central and western sections of the State did not suffer anything like as severely from the frosts as did the eastern section, due to the fact that the flora was not so far advanced as in the coastal region.

Beekeepers are taking their 1921 setback philosophically and making the best of it by striving in every way to get the bees to work to their utmost capacity and increasing colonies and building up for the 1922 season.

Bruce Anderson of Terra Ceia, Beaufort County, chosen president at the January meeting in Wilmington, has an aggressive program of activities for the North Caro-



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lina Beekeepers' Association for the current year, including particularly an exchange for the benefit of the membership. The members of this exchange may list with the secretary the honey and colonies of bees which they have for sale. Any members wishing to buy honey for their local trade or bees to increase their apiaries can also register with the secretary.

A folder setting out the system for the Exchange, as worked out by President Anderson and the executive committee, is now issued. The secretary-treasurership of the Association has just been shifted from the shoulders of J. E. Echert to W. J. Martin, Wilmington, N. C., who has agreed to undertake the duties for the present.

There is a strong sentiment among the Association membership for a state-wide campaign to impress upon the housekeepers the great and practically indispensable value of honey as a food—one that should be on every dining table every day of the year. If this is worked out as is being recommended, the State Association will arrange for special articles and advertisements in the State press and the local beekeepers will follow up with advertisements of their special products in their local papers.

There is a movement on foot now, the executive committee having authority to act, to make the next annual session a three-day affair, with some sort of special course for the benefit of the membership; so that there will be not only the "get-together" inspirational features for the meeting, but also considerable material benefit in instruction along lines that may especially appeal to North Carolina apiarists.

State Bee Specialist C. L. Sams has been making the rounds of the different sections of the State. Wherever it is possible to arrange for them there will be demonstrations in transferring bees from the gum and box hives to the standard hives, and lectures and demonstrations in beeyards will be arranged practically everywhere he goes. In this way the much-to-be-desired passing of the old gum and box hives is being materially hastened.

It is of interest in this connection to note that the excellent picture on the front page of the March Gleanings, "Passing of the Log Gum in the South," is a photograph taken by Editor E. R. Root, at the Kelly beeyard of the Lower Cape Fear Apiaries, operated by W. J. Martin, Wilmington. It showed D. G. Kelly, whose 150 big gum hives formed the nucleus for this apiary, in which standard hives were put a year ago. Mr. Kelly has been much interested in improved methods of beekeeping, observing every feature of the advanced methods closely and "catching on" with much aptness. His hand rests on a "gum" in which he first

hived a swarm when he was 14 years old. Now he is 65.

In the locality of this old Kelly apiary the many gum-hive beekeepers are coming to realize in a very marked degree the advantages of the improved hives, and a number are taking steps or laying plans to modernize their apiaries. Another season will scarcely pass without very many colonies of bees, heretofore handicapped in these old gums, finding themselves transferred into standard hives and receiving far more intelligent attention than bees in these old apiaries have ever received before. In all these improvements the "guiding star" is Bee Specialist C. L. Sams, who readily gives personal assistance to any and all beekeepers who can possibly be reached.

Wilmington, N. C. W. J. Martin.

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**In Ontario.**—At this date (June 10) prospects for clover honey are not so good as they were a month ago. Not that the condition of clover has changed much during the past month, but rather because bees are not generally as well off as they were early in May. Very little honey was gathered from dandelions, willows, etc., this spring here in York County, and we have had a long period with no honey coming in at all. Where colonies had an abundance of old stores they have not held up so badly, but those that were short of stores have not come along so well. All of our bees, with exception of about 200 colonies moved here lately, have required no feeding. But these 200 have been out of old stores for three weeks, and feeding has been going on all that time. While we at no time let brood suffer, yet these colonies fed every other day are not in as good condition as those that had abundance of old stores and have not been fed. The longer I keep bees, the more I am inclined to get away from feeding at all times of the year except in the fall, and then I want to do the feeding properly.

Alsike is open here in York County at least 10 days earlier than usual. But altho the ground is full of moisture and the days warm, yet the fields of alsike, pink everywhere, are yielding no nectar, and we are feeding, with acres of clover in bloom. I cannot even guess the reason, but am sorry to say that we are quite sure that no nectar is coming in. Sweet clover is just showing a few buds opening, and it is much earlier than usual, too. Only a small acreage of the latter clover was left for seed, but we are hoping it acts as it did last year.

Judging by what I have learned thru inquiries, I believe the bulk of the old honey is pretty well off the market at this writing. Dealers still quote prices of a month ago, but these prices may be named for the purpose of working off their supplies, as it is





## FROM NORTH, EAST, WEST AND SOUTH



doubtful if they would bid for more honey at prices they are quoting regularly. However, while we expect honey will be cheaper, yet we are not worrying on that score, for unless alsike soon acts differently, there will be little white honey from that source in our locality. A letter just to hand from our Binbrook apiaries in Wentworth County, south of Hamilton, states that alsike is in full bloom there and the flow very light. There, too, they have had lots of rain; but, as here at home, something that we do not understand, is lacking for nectar secretion.

These lines are being written after a day of varied experiences, in which hard work, mixed with pleasure, made up the quota of the day's program. At 7 a. m. I drove with the car some nine miles to an apiary of 170 colonies, to see how they were off for stores, for among this lot are 100 of the colonies that we have had to feed for the past three weeks. Work was anything but pleasant as no honey was coming in, and, after examining about one-third of them in a hurry, I decided that unless honey comes in inside of two days, more feeding will have to be done, even if alsike is in bloom around the yard. When I arrived home for dinner, disgusted with conditions in so far as the bees were concerned, I made up my mind to

change the program for the afternoon; so I dug some bait and again drove nine miles—this time not to a beeyard, but to a winding brook among the cedars. The mosquitoes were very much in evidence, but along with all other troubles they were soon forgotten because the speckled beauties were biting fairly well. I arrived home at 7:30 p. m. dead-tired—no question about that—but nevertheless in a different frame of mind than when I left home at noon today. This little tale is not told with any thought of its being at all helpful to readers of *Gleanings*, but simply once more to call attention to one of the nice things about being a beekeeper, or, for that matter, a follower of any rural pursuit. If you are working for some one else, no matter if you do get the "blues," you stay right at the old job till better or worse. On the other hand, if working at beekeeping or other kindred pursuits, one can go when he feels like it, even if work does suffer, for it is his own business, and the boss is not apt to scold when he is the one concerned. So excuse me, while I get a light to clean up those trout for breakfast, and then go to bed to sleep the sleep of the tired.

J. L. Byer.

Markham, Ont.

## HEADS OF GRAIN FROM DIFFERENT FIELDS

### Making Increase at Close of Honey Flow.

In *Gleanings* last August, page 485, several methods of making increase after the close of the honey flow were given. Among others was R. F. Holtermann's plan of building up nuclei into full colonies at the close of the honey flow by placing several supers of honey, bees and all, above each nucleus but separated from it by a bee-escape board. I tried the plan, but the bees wouldn't stay with the nucleus; or, at least only a very few of them did.

I then tried to build up the nuclei by another method. Just as I was taking the supers of honey from a strong colony, I removed the bee-escape board and put two queen-excluders over the strong colony, and then set a nucleus on top of the colony and separated from it by the queen-excluders. The bees couldn't go thru the two queen-excluders nearly as quickly as thru one excluder, and there was absolutely no fighting. When the nucleus was placed over the strong colony, the nucleus hive was filled up with drawn comb, as the nucleus occupied only one or two frames.

After two or three days the old colony was placed on a new stand, and the nucleus remained on the stand of the old hive. The young and emerging bees remain with the

old colony, and also some of the old bees. The nucleus also received its share of young bees, as many of them would doubtless pass up thru the queen-excluders before the old hive was removed, and, of course, most of the old bees would come back to the old stand. The next day after they were separated it was not an uncommon sight to see the bees of both hives bringing in pollen, tho I didn't expect to see pollen coming into the old colony so soon after it was moved. The colonies were then fed some thin sugar syrup to keep the queens laying.

By this method a beginner can raise his own queens and introduce them to a small nucleus. Then as soon as the honey flow is over the nuclei can be built up into strong colonies.

E. A. Hogarth.

Tara, Ontario.

**Taking from Cellar.** We have been in the bee business about 20 years. Our main honey flow comes from alsike clover. This yard is well protected on all four sides—on three sides by evergreens. We wrap our colonies as soon as taken from the cellar and keep them wrapped until the second super is full of brood.

Port Hope, Mich.

Edward Stewart.

## QUESTION.

—If the germ of European foul brood is in the honey, like American foul brood, what good will it do to requeen colonies having this disease except to have good queens?

J. G. Harman.  
California.

**Answer.**—Requeening in the treatment of European foul brood has a double purpose: that of changing the stock to a strain that does a better job of cleaning out the dead larvae, and also providing an interval of no egg-laying between the time the old queen is killed and the young queen begins to lay. During this interval the bees have an opportunity to catch up on housecleaning. The interval necessary for this purpose depends upon the strain of bees, the strength of the colony, and the presence or absence of an early honey flow.

### BEES KILLING DRONES IN MAY.

**Question.**—Why are strong colonies killing their drones at this season (May 27)? My colonies are extra strong and are beginning to store quite a bit of honey in the supers. Does this mean that they are not likely to swarm? C. E. Thompson.  
West Virginia.

**Answer.**—Yes, this means that the bees are not expecting to swarm soon. They began brood-rearing so early this spring that they were in a condition to swarm a month or more before the normal time for swarming. Cooler weather and a dearth of nectar came on in the eastern part of the country at about the time the bees were in condition to swarm. During this period of cool weather brood-rearing was reduced, and many colonies began killing the drones as tho the season had closed. This occurred especially in those colonies not well supplied with stores. They will probably not prepare to swarm until several weeks after they killed their drones, if at all during this season, for it will be three or four weeks before young bees begin to emerge again in great numbers if brood-rearing has been greatly reduced. While your colonies are now strong enough to swarm most of the workers are old enough to go to the fields, leaving but few bees in the brood-chamber during the day if nectar is available. This is not favorable to swarming if ample room is given in the supers.

### SWARM LOSES ITS QUEEN.

**Question.**—When a swarm loses its queen (she having her wings clipped) and returns to the hive, what is the proper thing to do with the colony?

Tennessee.

D. E. Scott.

**Answer.**—Any time within five or six days or before any of the young queens emerge, all but one of the queen-cells should be destroyed, the finest-looking one being left to requeen the colony. Usually when the operator is careful to find every queen-

## GLEANED BY ASKING

Geo. S. Demuth

cell, there will be no further attempt to swarm during the season when this is done. It sometimes happens, however, that the bees will swarm again

soon after this one young queen emerges from her cell, this young queen going out with the swarm and leaving the colony hopelessly queenless, since at this time there are no young larvae left in the hive from which another queen could be reared. To prevent this some beekeepers prefer to destroy all of the queen-cells about five days after the swarm issued, and again five days later; then introducing a young laying queen taken from a nucleus prepared in advance for this purpose.

### COMBS BUILT CROSSWISE IN BROOD-FRAMES.

**Question.**—When the combs are built across from one frame to another in the brood-chamber, what would you do with them? A. J. Hulse.  
Indiana.

**Answer.**—The combs can be cut from the frame, and each one then fastened within its own frame by tying them with cord as in transferring, or they may be left as they are until next spring; then, early in May, a second story filled with old dark brood-combs should be given. If the colony is strong the queen will soon go above and begin to lay in the second story. After she does this, place a queen-excluder between the two stories to keep her from going down again; then wait three weeks for all the brood in the lower story to emerge, after which it can be removed and the crooked combs melted for wax.

### EGGS IN VARIOUS POSITIONS IN CELLS.

**Question.**—I have a young queen that lays her eggs on the side of the cells, placing them in various positions. She is large and fine-looking. What is wrong with her? Harry R. Weiss.  
Ohio.

**Answer.**—Sometimes when a young queen first begins to lay she does not place her eggs in regular positions; but, if she is a normal queen, she should not do this very long. You can soon tell whether she is improving or not. If her eggs produce workers, she may be all right; but, if her eggs do not hatch or if they produce drones, she should be replaced by a good queen.

### TIME REQUIRED FOR RIPENING NECTAR AND SYRUP.

**Question.**—How long does it take the bees to ripen and seal honey made from sugar, and how long from nectar? R. F. Scott.  
Indiana.

**Answer.**—You probably do not mean honey made from sugar. When sugar syrup is fed to bees it does not become honey thru the process of ripening. Altho it may be changed slightly by the bees, it is easily detected as sugar syrup. It is not honey in the eyes of the law and could not legally be sold as such. The length of time re-



quired for ripening either nectar or syrup depends upon how thick it is at first and the amount of moisture in the air during the ripening process. In dry climates the nectar is sometimes so thick when first stored that it is ripened and sealed within a few days, while in a humid climate it may require several weeks for the bees to ripen and seal the honey if a large quantity is gathered.

#### DRONE-SIZE FOUNDATION FOR SECTIONS.

Question.—Has extra thin foundation imprinted with drone-cell bases ever been manufactured for use in comb-honey production?

Massachusetts. Arthur M. Southwick.

Answer.—Yes, such foundation has been made and used in comb-honey sections. The greatest objection to combs having cells of drone size in the sections is that the queen may go into the supers to lay drone eggs when there are but few drone-cells in the brood-chamber. When only full sheets of foundation of worker size are used in sections the queen seldom lays eggs in them, and a queen-excluder is not needed. Some have objected to the appearance of the cappings when drone foundation is used. The cappings and the attachment to the wood are usually more nearly perfect when worker-size foundation is used, altho some like the appearance of drone-cells better.

#### FERMENTATION IN COMB HONEY.

Question.—What is the cause of honey in the comb all capped over turning sour and when uncapped to ferment and run? John L. Brunson. Utah.

Answer.—Either the honey was not properly ripened before it was sealed or it was stored where it absorbed moisture after being sealed. Honey from some sources is more inclined to sour than that from other sources. Honey stored in bait combs, especially if the combs are not cut down so that the cells are quite shallow, sometimes ferments after being sealed, bursting the cappings and oozing out on the surface of the comb. Apparently, honey that is stored in deep cells is often not ripened as thoroly as when stored in shallow cells, which are elongated as more honey is added. After being removed from the hive, comb honey should be stored in a warm dry room and not subjected to great variation in temperature since if warm moisture-laden air comes in contact with cold honey, some of the moisture will be condensed on the surface of the combs and later absorbed by the honey.

#### TO REQUEEN WITHOUT REMOVING OLD QUEEN.

Question.—If a queen-cell is put into an upper story over an excluder and the excluder is taken out about two days after the young queen emerges, will the young queen usually kill the old queen?

Minnesota. Joseph Lovegan.

Answer.—In some cases the old queen will be killed, but probably in most cases the virgin queen will be the one that disappears. If the colony is in a condition to supersede its old queen, the virgin queen will often be accepted. Sometimes both

the old and the young queen will be permitted to remain in the colony for some time, each laying eggs in a normal manner, but usually after the close of the honey flow one of them disappears. Various schemes have been tried to requeen colonies without having to find and kill the old queen. Some have reported a high percentage of success by simply running a virgin queen less than 24 hours old into the hive at the entrance, followed by a little smoke; but this can not be depended upon for requeening, unless the bees are ready to supersede the old queen. It has been suggested that when clipping the wings of the queen her sting should be clipped at the same time, to permit her being superseded at any time by running a recently emerged virgin queen in at the entrance, the theory being that the virgin queen would be accepted because the old queen could not sting her. Apparently this plan has not worked out in practice. He who discovers a successful method of replacing old queens by some simple plan, without the necessity of finding them, will contribute much to the industry. (See May issue, pages 266 and 275.)

#### FEEDING BACK EXTRACTED HONEY.

Question.—Is there a successful way to feed extracted honey to a colony or colonies, and let them rebuild it or convert it into comb honey? There is no sale for extracted honey here.

Florida.

C. C. Langston.

Answer.—Extracted honey can be fed back and stored in the form of comb honey, but there are so many difficulties in the way of doing this that it would seldom be found profitable. Comb honey secured by feeding back extracted honey is usually not as good as ordinary comb honey. It sometimes granulates badly if not consumed early in the fall or winter, and is usually not so fine in appearance, the bees being inclined to build somewhat irregular comb, placing bits of wax here and there on the surface. Feeding back extracted honey to cause the bees to complete unfinished sections of comb honey at the close of the season was formerly practiced to some extent, but even this has been given up by most comb-honey producers, since unless the condition of the colonies used for this purpose is just right and the weather conditions are favorable at the time the feeding is done, much of the honey that is fed to the colonies will be consumed by the bees instead of being stored in the sections. Sometimes less than half of the honey fed is actually stored in completed sections. To feed back successfully the colonies must be strong, the brood-chamber must be filled with brood, and it must not be too large for the queen to keep well filled. The honey should be thinned down by adding about one-third of its weight of water. It should be given to the bees in a large feeder that will hold 15 to 20 pounds of honey, and arranged so the bees will take it rapidly. The feeding should be done during hot weather.

**T**HROUGHOUT a large part of the United States, July brings the close of the main honey flow. In the Northeast where alsike and white clover are the chief source of nectar, the honey flow usually closes early in July, if the weather has been hot and dry, but sometimes it continues thru the month if the weather is wet and cool. Sometimes just as the season appears to be closing, a good rain gives the clovers a new start, which prolongs the honey flow a week or more. In some parts of the clover region there are still enough basswood trees to make a difference in the amount of nectar when these trees begin to bloom, late in June or early in July. In some places there is enough sweet clover to prolong the honey flow for some time after white and alsike clover fail. There is about as much variation in the time of the closing of the honey flow as there is in its beginning, and the beginner should be alert for indications of the closing of the season, for it is important that the management of the colonies shall be in accordance with the time of the ending of the honey flow.

Sometimes the honey flow closes abruptly, without warning, taking both bees and beekeeper by surprise and leaving much unfinished work in the supers. This is often the case when basswood furnishes some nectar at the close of the clover honey flow. At other times there is a gradual tapering off in the amount of nectar brought in, so that it is difficult to tell definitely when the honey flow ceases, thus giving both bees and beekeeper an opportunity to modify their work accordingly. In this case the bees usually put less honey into the supers, as the amount of nectar diminishes, but crowd it into the brood-chamber as the brood emerges, thus greatly reducing the room for the queen.

#### Indications of the Closing of the Season.

Sometimes the first indications of the closing of the honey flow noticed by the beekeeper is this tendency of the bees to put more honey into the brood-chamber. Another indication is the way the workers begin to treat the drones. Usually before the the supply of nectar fails entirely, they begin to crowd the drones down on the floor of the hive or out at the entrance, and occasionally a worker may be seen struggling with a drone, apparently trying to lead him outside of the hive. In some localities another indication of the approaching close of the honey flow is the increased use of propolis about the hive in closing up cracks, and especially a tendency to varnish over the new white capping of the honey with propolis. Still another indication of the

## TALKS TO BEGINNERS

Geo. S. Demuth

closing of the honey flow is an increasing tendency of the bees to sting.

#### Bees Become Cross as Season Closes.

The beginner should be very careful in handling the bees at this time. He must remember that they are most easily handled during the early part of the honey flow or during a minor honey flow still earlier, as from fruit bloom. Most beginners learn this only after a severe stinging. Even the seasoned beekeeper usually has to learn his lesson anew every year, often going ahead handling bees as tho they were always as docile as earlier in the season, until the bees teach him by many stings that it is now time to be more cautious.

If the honey flow ceases suddenly, the beginner who has enjoyed taking a peep into his hives every few days to see what the bees have been doing, will be surprised when he takes his first peep at the close of the season, to find that the docile creatures of a few days ago have suddenly learned to fight with a vengeance. There are times when it is advisable to leave the bees strictly alone, unless some attention is really necessary.

#### Management of Supers Toward Close of Season.

As the close of the season approaches, additional supers should not be given as freely as earlier, especially for comb honey, and if the honey flow is slowing down, the empty super should be placed on top of those already on the hive instead of being placed under them as before. (See pages 346 and 347, June issue.) At this time it is well to wait until the bees have nearly filled the last super given before giving another, but they should not be crowded for want of super room even now, and the new super should be given before the combs in the last one are completely built out.

All comb honey supers that are nearly finished at this time should be taken off, the unfinished sections sorted out, and put back on the hives to be finished. In doing this it is well to put the sections that are most nearly finished in the middle of the super, so they will be finished promptly when returned to the bees. This should be done, if possible, before the close of the honey flow. In this way it is usually possible to reduce the number of supers on each hive to a single one, thus concentrating the work in the supers and greatly increasing the chances of having the sections finished.

For chunk honey (comb honey produced in shallow extracting frames instead of in sections) the same rule should be followed, but for extracted honey it is not necessary to take off any of it until some time after the close of the honey flow, thus permitting



it to ripen thoroughly before extracting, a. tho any of the combs that are sealed or nearly so, may be taken out of the super and extracted at any time. This is sometimes quite desirable if there are not enough supers to hold the entire crop, for these combs of honey can be extracted and the empty combs returned to be refilled.

#### **What To Do With Late Swarms.**

There will probably be some late swarming this season in the North. Swarms that issue near the close of the honey flow are quite a nuisance and it is sometimes rather puzzling as to what is best to do with them, for if they come too late they may not gather enough stores for their own use during late summer and fall, to say nothing of their winter stores. Swarms that issue in July may be managed as described in the May issue of *Gleanings*, providing the honey flow is good and may be expected to continue for two or three weeks, but if swarms issue too near the close of the honey flow, it will be better not to permit a division of the original colony at this time.

A late swarm may be hived back into its own hive without the queen, then all but one of the queen-cells destroyed six days later, the one queen-cell (the finest-looking one) being left to requeen the colony. If the queen's wings are clipped she may simply be caught and killed while the swarm is out, or if a queen-trap is used, the trap may be removed (first being sure that queen is in it) and the queen disposed of at any convenient time. When the queen accompanies the swarm (not having her wings clipped and no queen-trap being used) the swarm after clustering may be shaken into a basket, carried to the hive, poured out in front of the entrance and induced to re-enter the hive, but first covering the entrance with an entrance guard or a queen-trap to keep the queen from going in with the bees. When most of the bees have gone into the hive thru the queen-excluding metal, those remaining can then be driven in by smoke, so the queen can be found and killed.

Sometimes when a swarm issues just as the season is closing, it works well to hive it in a box, placing the box close beside the hive, then after a day or two shaking the swarm out of the box and hiving the bees back into their own hive. If it is quite late in the season, the bees will sometimes destroy their own queen-cells when this is done and give up further swarming.

#### **Beware of Robber Bees.**

After the honey flow, every precaution should be taken to prevent robbing. At this time, if a hive is opened and the combs exposed for even a couple of minutes, bees from neighboring colonies may have time to get a taste of stolen sweets, after which they may come in great numbers for more. If these robbers are able to enter the hive before the colony being handled has had time to reorganize for defense, they may come by the thousands to carry away loads

of honey. The colony being robbed may be so completely overcome by the robbers that it fails to organize for defense, and is soon practically ruined by the attacking robbers. After such a start at robbing, the robbers may attack other colonies in the vicinity, and any that are too weak to defend themselves will be robbed of all their honey in the same way.

Not only are colonies ruined in this way, but when bees begin to rob they become exceedingly cross and attack any living thing within several rods of the apiary. The city or village beekeeper, when taking honey away from the bees at the close of the season must be exceedingly careful not to expose any honey where robbers can get at it, for there is great danger of starting the bees on a rampage of robbing and stinging, causing great annoyance to the neighbors. All such troubles can be avoided by a little care, but unfortunately many beginners must pass thru at least one such ordeal before they fully realize the seriousness of exposing a little honey after the close of the honey flow, and the necessity of preventing even the slightest beginning of robbing.

#### **How to Detect Robbers.**

Robbers are inclined to collect around the edges of the hive cover or between the brood-chamber and the super, if the propolis which sealed these cracks is broken by opening the hive. Bees do not do this except when trying to rob, so this is always a danger signal. When they begin to do this it is time for the beginner to quit working with the bees, tho the veteran may be able to continue his work by extreme caution.

When robbers succeed in passing the guards at the entrance, the beginner can detect this by the great commotion at the entrance. Robber bees do not usually alight at the entrance and go directly into the hive, but dart about before alighting, watching for a chance to slip by the guards. They may alight at the entrance in a nervous manner and again take wing, doing this repeatedly before actually entering the hive.

If the colony being robbed fails in its defense, the robbers enter more boldly and may be seen coming out with loads of stolen honey. In doing this they usually run upward on the front of the hive before taking wing, instead of flying direct from the entrance. The commotion of robbing can be distinguished from the playflight of young bees by the appearance of the bees, the robbers being older, by the higher pitch of their humming, and by their nervous manner in flight. Robbing may occur at any time of day, while young bees usually take their playflight early in the afternoon.

#### **Taking Off Honey at Close of Season.**

As soon as the honey flow ceases, all comb-honey supers should be taken off the hives, regardless of whether they are finished or not, for if left on longer, the bees will ruin the sections by covering them with propolis

(Continued on page 452.)

ON Memorial Day we had a reunion of the Root family. In fact, we have frequent reunions when we can get the whole tribe together. We usually have it out in the woods or in some shady retreat, especially if the weather

is hot. Perhaps I might mention that, besides our own five children, there were present our three sons-in-law and two daughters-in-law, and ten grandchildren and four great-grandchildren. At these reunions everybody carries some sort of lunch to put on the table, and everybody can look it over and either go and get, or call, for the particular kind of food he prefers.

They assigned a place to me on a little bit of lounge by the side of the mother of three of the great-grandchildren—Mrs. Ethel Calvert. By the way, the first meeting with this good lady was when she herself was a comparatively little chick. Her father and mother (Mr. and Mrs. Acklin) had charge of our branch house at St. Paul, Minn. I mentioned this in a write-up years ago, and told how I was impressed and delighted with the wonderful singing of this young miss; and altho she is now the mother of three beautiful little girls, she looks much like a “young miss” even yet. So much for the mother. Between us was one of the little girls, two and a half years old; and as she could not hold her own special cup of milk very well while sitting on the lounge, they brought her little baby-chair, and finally a miniature table to match the chair. See the picture.

This banquet was about an hour and a half later than my regular suppertime. The reason for being so late was because we could not call in all the wanderers, big and little. On this account I was getting to be somewhat faint, and all because of the delayed mealtime. In order to serve the children first, when they got the chair and table fixed her mother gave her a big glass of milk. I said to myself mentally, “Why, that little chick can never drink all of that milk.” But she grabbed for it, and then proceeded to sip very slowly. When she had finished half the glass and pushed it back to the middle of the table I supposed, of course, she had all she wanted; and as I had then for some time been “hankering” for some of the same milk I suggested to the mother that the child would not want any more, and that I might have what was remaining in the glass. Instead of acquiescing, however, she called for a fresh glass for myself, and still later she pointed to an



A little child shall lead them.—ISA. 12:6.

Butter and honey shall he eat.—ISA. 7:15.

I will bring you into a land flowing with milk and honey.—EX. 3:17.

empty glass on the little table, and called my attention to the fact that the little girl drank it all. I expressed surprise that she could drink so much at one meal. But later on, when the repast was about all over, the father of the little girl called my at-

tention to a second glass of milk for that one wee little girl; and when I asked if it would not make her sick, he gravely informed me that she not only drank about that quantity of milk three times a day, but sometimes she had a *third* glass and yet did not become sick. In fact, her mother informed me she might almost say that the little girl had never been sick a day in her life.

My friends, I have taken quite a little space to tell this story, for there is a big moral to it. The great wide world has not discovered *even yet* the value of milk, not only for babies and growing children, but for middle-aged men and especially for old



Roberta Maude Calvert, 2½ years old, never sick a day in her life, sipping her regular ration, of a pint of milk, three times a day.



men like myself. Since prohibition has gone into effect we are told that milk is largely taking the place of beer. I have frequently noticed, and mentally thanked God to see men in the cities, doing hard muscular work, rush into a grocery, perhaps where they used to get beer, and get a bottle of milk. Just think of the difference! The brewers used to try to make us believe that beer was liquid bread. But I think that pretty much everybody knows just now that there is no bread about it. It is not food at all. Some years ago I started to get up one morning; but as soon as I straightened up on my feet I felt so dizzy that I had to lie down again. I tried several times, but it was no use. Mrs. Root had been up some time, and had made some hot coffee. I suggested that a drink would perhaps do me good. Somehow I tried it without milk. It did not help me a particle. As she usually drinks tea I suggested that perhaps the tea would help. Like the coffee, it did not do a mite of good. Then I thought of milk, and took perhaps a teacupful, sipping it slowly. The milk hit the spot, straight and sure. What I needed was nourishment. Tea and coffee were not nourishment at all—simply stimulants that did harm rather than good. When the whole wide world can be fully educated and enlightened to the advantages of milk over stimulants of any sort we shall be well on the way toward the glad time when the new heavens and the new earth will be ushered in.

Now, there are going to be two parts to this Home paper. The above is part one. Part two is something I saw in the Cleveland Plain Dealer a few days ago. The story is rather too long to copy, and so I will give my own version. A soldier had long been in the hospital, and I think that he and his friends had for some time despaired of his ever getting up. He was suddenly taken worse, and a particular friend of his—an army official—was notified that his friend would probably not live more than 15 minutes, and that if he wanted to see him before he died he would have to drop everything and hurry up. This titled friend of his of course dropped everything and rushed to the bedside. The poor fellow thought his time was near; and when asked if there was anything he wanted, what do you think he said? He replied that he wanted some buttermilk.

"Why, haven't you been having buttermilk when you wanted it?"

"No. The doctor and the nurse both declared that in my condition it would be very dangerous."

"In *your* condition! Why, bless your soul, if a man is going to die in 15 minutes what difference does it make what he has?"

Then he continued:

"I will get you some buttermilk just as soon as possible, and I want you to take notice that you *must* live until I get it."

The waiter who was sent for it came back, saying there was none to be had anywhere in the neighborhood. But this man of authority replied with vehemence:

"This poor sick soldier is going to have some buttermilk, no matter what it costs. How far do you have to go for it?"

They said there was none to be had nearer than 22 miles.

"Well, you all get busy. Hunt up the fastest automobile there is in the camp, and go over and get that buttermilk and hustle back. It is a matter of life and death."

In due time the buttermilk came. It was more than 15 minutes, but the patient was not dead. I think the great energy of his long-time friend, the general whom he had been in the habit of obeying, had much to do with keeping him up. He stayed right by the patient. He gave him a little sip at first. A few minutes later he gave a little more. When that baby drank a big glass of milk it made me think of the poor soldier. Did the buttermilk kill him as the doctor and nurse said it would? Bless your heart, no. It was the very nourishment that old Dame Nature had been calling for. By the way, this story I am telling you is rather tough on our doctors and nurses, and our hospitals as well. I wonder if that could have been a place where these "old relies" still exist, that give rum and whisky to a sick or dying man. The buttermilk acted on this poor run-down soldier exactly as the milk acted in my case. During the next 24 hours the patient drank half a gallon—of course at intervals. He is now alive and well. Instead of dying in 15 minutes, he did not die at all.

"Butter and honey shall he eat, that he may know to refuse the evil and choose the good." I am told that in the Bible the word butter is only another word for elaborated or butter milk.

I shall be glad if this Home paper shall stir up the people to a better knowledge of the fact that milk, including its different forms, such as buttermilk, cheese, etc., is oftentimes better medicine than anything the drugstores or the doctors can furnish. If you declare, as I have many times done, that milk does not agree with you, follow the example of the little girl and sip it slowly. Take half a tumblerful or two glasses as she did; and I think the example in the way of diet, and other things that these little ones set before us, will be, many times nearer right, and a safer guide than some of the great writers and teachers in the matter of health.

### THE HUBAM CLOVER.

*"Tall Oaks from Little Acorns Grow."*

Some of our readers will doubtless recall the fact that in Gleanings for July 1, 1915, pages 536 and 537, I gave two pictures of a new sweet clover. It was a large plant

and had much larger leaves than any sweet clover I had ever seen. I sent specimens of it to our experiment station, and Professor Thorne pronounced it a "mutation," and he said he was very glad I had got hold of it, and that it might prove to be something of great value. Later on I offered a few seeds from this plant to any of our subscribers who might care to work with me in giving an improved sweet clover to the world. Well, so far as I can learn, not much came of it, and we rather decided that the extra amount of bloom and larger leaf were owing to some favorable conditions rather than to the fact of its being a different variety. My article on the matter, however, called forth letters from far and wide in regard to sweet clover plants that showed unusual peculiarities.

As early as December, 1916, we printed a reference to an annual white sweet clover. On page 1189 of that issue, we find the following:

A field of *Melilotus alba* sown here last spring bloomed profusely when about four feet high. I enclose a sample, and ask the cause if you know of any parallel case. I have never known it to bloom the first year. C. W. Riggs.

Earl, Ark., Sept. 26, 1916.

On page 385 of the May issue, 1917, under the subject, "White Sweet Clover in Full Bloom the First Year's Sowing," we printed a letter from W. O. Graeber, Milbrae, California, a part of which runs as follows:

In the December 15 issue, on page 1188, I noticed an article by Mr. C. W. Riggs, regarding *Melilotus alba* blooming the first year. I have only one year's experience with it, and that was in 1915, when in April I sowed a small patch just to see how it would do in my locality. I kept it moist with a garden hose, as there was no rain for a time. It came up nicely and grew rapidly; and when about four feet high about the first week in July, it began to bloom and kept growing higher and sending out new buds and blooms. I went away August 4, and a few days before going I took an eight-foot rule and measured a number of the stalks. The tallest measured 9 feet 8 inches, and it was still growing when I left. Several other stalks went 8 feet and 7 feet 6 inches, and from that down to 3 feet. Some of the stems were almost a half an inch in diameter at the base. When I returned the latter part of September it had seeded and most of it was down. My bees were very busy on it while it bloomed. I got the seed from a local seed house, and it was the white variety, very sweet-scented.

These were among the first, if not indeed the first, references that ever appeared in any periodical in reference to an annual sweet clover.

Now, our journal goes to the Agricultural College, Ames, Iowa; but I do not know whether Prof. Hughes at that time was conversant with Gleanings or not. I think very likely he knew something of my efforts to get a superior strain of sweet clover, and that I had also been sending packets of seed to any one who would send a stamped envelope. But I rather think he knew something about it, because of a little packet of perhaps 50 seeds he sent me with the following letter:

Mr. A. I. Root:

We are sending you \$40.00 worth of seed—not by freight, but inclosed herewith attached to an

explanatory sheet and with our compliments. You will be interested in the attached statements regarding this seed, which I am sending to the different State experiment stations. Will you plant this seed this year?

Farm Crops Section,

By H. D. Hughes.

Ames, Iowa, April 15, 1918.

I straightway sent half of the seeds to our own experiment station. However, he had already sent some there direct. My own 25 or 30 seeds were carefully planted indoors, and in October, 1918, I notified the friends that I was ready to send a small packet to any applicant. We did not keep record of how many were sent out; but we had so many letters, all favorable, that there was not room for more than a small part of them in Gleanings.

There was a picture of the plant given on page 374 of our June issue. You will notice what a tremendous amount of feed it is going to make, aside from the honey. While I write, June 14, it is not settled positively that the plants that live over will still produce the real Annual seed, or whether it will revert to the old biennial, or whether there is a bare possibility of finding a perennial. The plant we picture in this issue is budded ready to bloom. There is no question about its being the Hubam that wintered over, because the old dried stalk was still in the center when I found them starting this spring.



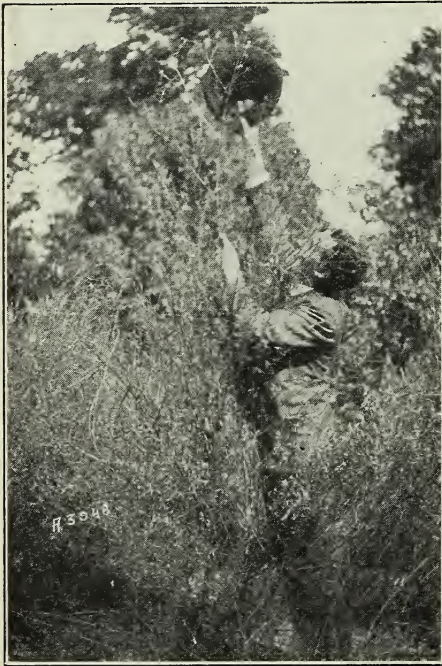
The plant pictured on page 374 June issue, 32 days later; yard stick on right.

A valuable Government bulletin (Annual White Sweet Clover) was issued by the Department of Agriculture last April. This bulletin contains 21 pages, with illustrations on nearly every page. It may be secured of the Government Printing-office for 5 cents per copy. It covers the whole ground completely, except that no mention is made in regard to the plants that winter over, such as I have pictured. Prof. Hughes' joke about sending me fifty seeds, "forty dollars worth," was something more than a



joke. I think I have already mentioned that the DeGraff Food Company, DeGraff, Ohio, paid our good friends, The Field Seed Company, of Shenandoah, Iowa, something like \$10,000 for half of the seed from a six-acre crop. Well, Mr. Crites, president of the above company, has just paid us a visit. (See their advertisement in this issue.) Near their plant at DeGraff, Ohio, they are putting out 500 acres to this new sweet clover. They have also 100 acres somewhere in Texas, where they are now harvesting the new seed. Besides this, they have about 500 more—I think in North Dakota.

By the way, we have several reports from our subscribers who have had a little packet of perhaps 30 to 40 seeds of getting from one to two pounds of seed from these little packets we have been sending out. Prof. Hughes informs us that the College, Ames, Iowa, has been kind enough to grant him a leave of absence for one year to visit Alabama, where the seed was first found, and do what he can for the benefit of humanity, in addition to what he has already done in working out the possibilities of this plant, and in helping to develop it as rapidly as possible.



A 9-foot plant of Hubam clover at Ames, Iowa, 1920. H. D. Hughes tries to reach the top. Photographed in October when the seed was ripe and most of the leaves had fallen. This clover has made a growth of 9 feet in  $3\frac{1}{2}$  months. When the Iowa Station first announced the discovery of this clover in 1918 it was with the statement that it had grown  $4\frac{1}{2}$  feet in  $3\frac{1}{2}$  months, when medium red clover made a growth of 5 inches. Growths reported in 1920 are 100% greater than those first reported.

Let me digress a little. In our recent Sunday-school lesson we had the story of the good Samaritan. Now, as I see it, Prof. Hughes is a good Samaritan to the whole wide world. His active energy in getting the seed quickly disseminated, not only thru-out America but the whole wide world (even into the islands of the sea), is certainly commendable; and I feel particularly happy to think that it was my privilege, altho I did not at the time realize what I was doing, to back him up and help him in his efforts to reduce, say, the "high cost of living." I verily believe this plant will do more to make this "a land flowing with milk and honey" than any other plant, possibly, in the whole world.

By the way, The DeGraff Seed Company, DeGraff, Ohio, have sent us some leaflets giving full information in regard to this new clover. They have also sent us several pounds of the seed which they have gathered in Texas from seed that was planted since last Christmas. This is very nice-looking seed and we have planted some of it near our office and have some left. We are still going to send out trial packages of this wonderful clover, and if The DeGraff Food Company will keep us supplied with seed (which I know they will until we produce some ourselves this fall) we will keep on sending seed in small pinches to every one who asks for it. I want every bee man who has not seen this clover grow to write me for a pinch of the seed and for one of these leaflets which The DeGraff Food Company have sent us. I want to help Prof. Hughes and The DeGraff Food Company and every one else in distributing seed of one of the greatest plants which God in His all-wise Providence has given to his children.

#### ADDITIONAL INFORMATION.

We have just received from Prof. Beckman of the Iowa State College a communication from which we make clippings as below:

When seeded with small grain at Ames, Iowa, it produced six times the growth of medium red and mammoth clover, and three times that of the biennial white sweet clover, following the removal of small grain crop. When seeded broadcast on a weedy and poorly prepared seedbed the last of May it overcame the weeds, made a growth of  $5\frac{1}{2}$  to 7 feet and matured a seed crop.

The growth when carefully measured has often averaged over  $1\frac{1}{2}$  inches per day, with a maximum under greenhouse conditions of  $2\frac{1}{2}$  inches in 15 hours.

Its heavy seed-setting characters are indicated by seed spikes which have measured 20 inches in length. Planted in rows three feet apart the seed yields have averaged from 5 to 8 bushels per acre, while with closely spaced growths the yield has run over 10 bushels per acre of clean, scarified seed.

While Hubam clover has gained many friends the past year, the most uniformly enthusiastic group of men are the beekeepers. The most widely read and oldest bee journal in the United States carried extensive discussions of its merit, with many illustrations, in eight of the twelve issues of the year 1920.

This clover was found growing in greenhouses at Ames by Professor Hughes in the winter 1915-16. When planted in the field it made a growth of be-

(Continued on page 454.)

## Classified Advertisements

Notices will be inserted in these classified columns for 30c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

### REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

J. N. Harris, J. H. Corwin, C. A. Mayeux, Ward Lamkin, Noah Bordner, F. D. Manchester, Chas. D. Sherman, Sterling Products Co., A. R. Harding, S. Rouse, J. L. St. Romain, R. O. Cox, Geo. W. Coltrin & Son, Dr. C. E. Sheldon, Geo. B. Howe, Dr. A. Wright, J. D. Harrah, L. C. Mayeux, L. R. Dockery, H. D. Rauchfuss, I. J. Stringham, M'ss E. J. King, H. L. Murry, Federal Farm Loan Board.

### HONEY AND WAX FOR SALE.

FOR SALE—Fancy clover honey in 60-lb. cans. Jos. Hanke, Port Washington, Wis.

FOR SALE—Choice clover extracted honey. State quantity wanted. J. D. Beals, Oto, Iowa.

FOR SALE—Choice white clover honey in 60-lb. cans—none finer. J. F. Moore, Tiffin, Ohio.

FOR SALE—Basswood and buckwheat honey in 60-lb. cans. Bert Smith, Romulus, N. Y.

FOR SALE—Fine quality raspberry milkweed honey in 5-lb. and 10-lb. pails and 60-lb. cans. P. W. Sowinski, Bellaire, Mich.

FOR SALE—2000 lbs. choice white clover extracted honey. State quantity wanted. Sample 20c, applied on first order. C. H. Hodgkin, Rochester, O.

FOR SALE—Finest quality, white sweet clover honey in 60-lb. tins, two to case, 12c. None better. F. O. B. Joe C. Weaver, Cochrane, Ala.

FOR SALE—Extracted clover honey, best quality at \$14.40 per case of two 5-gal. cans. J. J. Lewis, Lyons, N. Y.

FOR SALE—Extra choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample 20c, same to apply on first order. David Running, Filion, Mich.

FOR SALE—Clover, basswood or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State Honey. C. B. Howard, Geneva, N. Y.

FOR SALE—White clover honey, almost water white. Put up in new 60-lb. tin cans, two to the case. Write for prices. D. R. Townsend, Northstar, Mich.

FOR SALE—White honey in 60-lb. cans, sample and price on request. Also white clover comb, 24 sections to case. The A. I. Root Co., Inc., 23 Leonard St., New York City.

FOR SALE—White honey, 15c a lb.; L. A. alfalfa, 14c, in two 60-lb. cans; Chilian in 165-lb. kegs, 10c; light amber honey in 50-gal bbls., 80c a gal. Beeswax, 30c a lb. Walter C. Morris, 105 Hudson St., New York City.

FOR SALE—Finest quality clover extracted honey in new 60-lb. tins at greatly reduced price to close out balance of 1920 crop. Say how much you can use and we will be pleased to quote you our lowest price. Address E. D. Townsend & Sons, Northstar, Mich.

HONEY FOR SALE—In 60-lb. tins, immediate shipment f. o. b. New York. California white orange, 18c lb.; Calif. white sage, 16c lb.; white sweet clover, 13c lb.; light amber sage, 12c lb.; West Indian light amber, 10c lb. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—New crop fancy white comb honey, No. 1 grade, \$7.00 per case of 24 sections; No. 2 grade, \$6.00. Extracted clover honey, 15c per pound; amber and buckwheat, 12½c per pound; two 60-lb. cans to case. Amber in 50-gal. barrels, 10c per pound. H. G. Quirin, Bellevue, Ohio.

RASPBERRY honey for sale. Was left on the hives until thoroughly ripened by the bees. It is thick, rich, ripe and delicious. Put up for sale in new 60-lb. tin cans. Price, 2 cans in a case, \$18.00. One can, \$9.50. Sample by mail for 20c, which may be applied on order for honey. Elmer Hutchinson & Son, Lake City, Mich.

### HONEY AND WAX WANTED.

WANTED—Comb honey, carlots or less. Heard & Woodhull, 4696 18th St., Detroit, Mich.

HONEY WANTED—Give particulars in first letter. Elton Warner, "Beaverdam," Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered.

A. I. Root Co. of Iowa, Council Bluffs, Iowa.

WANTED—All kinds comb and extracted honey and beeswax. Car lots or less—and full colonies of bees. W. C. Morris, 170 Rossiter Ave., Yonkers, N. Y.

WANTED—6000 pounds of off-grade extracted amber honey. Submit sample and quote price f. o. b. Terre Haute, Ind. W. A. Hunter, 119 S. 3rd St., Terre Haute, Ind.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, O.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings, or slumgum. Send for our terms and our new 1921 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Illinois.

WANTED—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax, and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address. So we can identify it immediately upon arrival, and make prompt remittance.

The A. I. Root Co., Medina, Ohio.

### FOR SALE.

HONEY LABELS—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

ROOT'S goods at Root prices. A. W. Yates, 3 Chapman St., Hartford, Conn.



**ROOT'S BEE SUPPLIES**—For the Central Southwest Beekeepers. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

**PORTER BEE-ESCAPES** save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

**FOR SALE—"SUPERIOR" FOUNDATION**, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

**FOR SALE**—5 Root Buckeye hives, complete, less frames, used one season. K. R. Fuller, Marengo, R. D. No. 2, Ohio.

**FOR SALE** on shares, 14 apiaries, one or all. Healthful location with American school and church in town, on stone road. Last crop over 40 tons. M. C. Engle, Herradura, Cuba.

**POWER** rip and cross-cut saw, \$30; Sun type-writer, \$10; Peterson capping-melter, \$6.00; lathe, \$3.00; 3x5 printing press, type, etc., \$8.00. Clarence Foote, Delanson, N. Y.

**FOR SALE**—Good second-hand five-gallon cans, two cans to the case; 10 cases, 60c each; 25 cases, 50c each. A. I. Root Co., 224 W. Huron St., Chicago, Ill.

**ROOT'S BARGAIN LIST NO. 11.**—Send a postcard for bargain list made to clean up odds and ends, discontinued styles, sizes and patterns, much of which is in the best of condition and entirely serviceable. A. I. Root Co., Medina, Ohio.

**FOR SALE**—40 10-frame Excelsior covers, painted, slightly used, 50c each; 42 8-frame Excelsior covers, KD, 40c each; 24 Miller feeders, nailed, new, 50c each. C. C. Brinton, Bloomsburg, Pa.

**EXTRACTORS**—Root four-frame power, with pump and engine. Novice extractor. Hatch wax press. All new, never been used. Priced low for quick sale. E. J. Adkisson, West Nashville, R. D. No. 4, Tenn.

**B GRADE SECTIONS**—We have a small supply of B grade sections in several sizes which we offer subject to previous sale as follows, 4x5x1 3/4 (Dan.), 3 3/4x5x1 1/2 (Ideal), 4 1/4x4 1/4x1 1/2, and 4 1/4x1 3/4x1 1/2 (N section). 500 for \$5.00 net; 5000 for \$45.00 net. The A. I. Root Co., Medina, O.

**FOR SALE**—Big bargain! Selling out, leaving the State. I will sell my fine apiary of 100 colonies of Italian bees in 8 and 10 frame new hives, and all up-to-date equipment for running same, on a buckwheat location, 30 miles west of Alexander's apiary in New York State, in village three miles from car line, includes all my honey customers, good for 4 tons of honey each season. Good will, etc., also includes house, one acre of good land, fruit, bee-cellar, honey house, etc. All for \$1700 cash. Get busy and write me. Walter J. D'Alliard, Amsterdam, R. D. No. 5, N. Y.

**FOR SALE**—45 10-frame hive-bodies, with Hoffman frames, new, wired and foundation imbedded, \$2.00 each; 35 10-frame hives, complete, NEW galvanized covers, \$2.00 each; 35 8-frame hives, air-spaced hives, "not new," with drawn worker combs, \$2.00 each; 30 10-frame hive-bodies with frames nailed and painted, "NEW goods," \$1.50 each; 25 comb honey supers, 75c each; 30 feeders, 10c each. Standard supplies. First class in every way. No foul brood combs. Most of these supplies never been on the hive. Reason for selling, going in other business. "This is a big bargain." W. J. D'Alliard, "Glenville Apiary," Amsterdam, R. F. D. No. 5, N. Y.

## WANTS AND EXCHANGES.

**WANTED**—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

**WILL** exchange new phonograph for extractor and clover honey. For sale, nearly new Hatch wax press, \$10.00. Olaf Hegre, Madison, Minn., R. D. No. 2.

**FOR SALE OR EXCHANGE**—Two and three frame nucleus, Italian bees for Rhode Island chickens and brown Leghorns. 50 bushels prime re-cleaned white clover seed, 35c per pound. L. C. Mayeux, Lock Box 4, Hamburg, La.

## MISCELLANEOUS

**FOR SALE**—400 bushels buckwheat, \$1.60 per bushel. New grain bags, 30c extra. Albert Bues, Wharton, Ohio.

**FOR SALE**—Auto trailer. Made for beeyard use. Pneumatic tires. Photo furnished. \$60.00. B. F. Kindig, East Lansing, Mich.

**GOLDEN SEAL**—A root used in medicine by every doctor in the country. The wild supply is about gone. Learn how to grow it by subscribing to Special Crops, a monthly magazine devoted to medicinal root culture. \$1.00 per year, sample copy, 10c. The root is worth \$4.00 per pound. Address Special Crops, Skaneateles, Box G, N. Y.

## BEEES AND QUEENS.

**FINEST** Italian queens. Send for booklet and price list. Jay Smith, R. D. No. 3, Vincennes, Ind.

**WHEN** it's GOLDEN, it's PHELPS. C. W. PHELPS & SON, Binghamton, N. Y.

**FOR SALE**—Italian queens and nuclei. B. F. Kindig, E. Lansing, Mich.

**PACKAGE BEEES**—Dependable Italian queens. E. A. Harris, Albany, Ala.

**HARDY** Italian queens, \$1.00 each. W. G. Lauver, Middletown, Pa.

**THAGARD ITALIAN QUEENS**—See display advertisement elsewhere.

**SIMMONS' ITALIAN QUEENS**, bees and nuclei. Fremont Apiary, Livingston, N. Y.

**SEE** our large advertisement on page 454 for prices. Buckeye Bee Co., Justus, Ohio.

**GOLDEN** Italian queens, untested, 1, \$1.25; 6, \$7.00. E. A. Simmons, Greenville, Ala.

**PHELPS' GOLDEN QUEENS** will please you. Mated, \$2.00. C. W. Phelps & Son, Binghamton, N. Y.

**MY** famous Italian queens, June 1 and later, \$1.50 each, six for \$8.00. J. W. Romberger, Apiarian, 3113 Locust St., St. Joseph, Mo.

**IF** you want queens that will produce results, give **THAGARD'S ITALIAN QUEENS** a trial. V. R. Thagard, Greenville, Ala.

**ITALIAN QUEENS**—Recognized honey-gathering strain, June 10 (a little earlier if possible) until close of season. Untested, each, \$1.75; 6, \$10.00; 12, \$18.50.

R. F. Holtermann, Brantford, Ont., Can.

**FOR SALE**—Golden and three-banded leather-colored Italian queens, untested, \$1.50; tested, \$2.00. Special inducements to large buyers of nuclei and package bees. J. B. Marshall & Son, Rosedale Apiaries, Big Bend, La.

**FOR SALE**—Root's strain of Golden and leather-colored Italian queens, bees by the pound and nuclei. Untested, \$1.50 each; select untested, \$2.00; tested, \$2.50 each; select tested, \$3.00. For larger lots write. Circular free. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—20 colonies bees in standard L. hives, \$10.00 per hive. T. A. Kragness, 6031 Wentworth Ave., Chicago, Ills.

FOR SALE—Untested Italian queens, three-banded only, \$1.50 each; 8.00 per half doz., \$15.00 per doz. J. F. Garretson, Bound Brook, N. J.

QUEENS—Three-banded Italians, untested, \$1.25 each; \$12.00 for 12. Satisfaction guaranteed. J. D. Kroha, 87 North St., Danbury, Conn.

BEEES AND QUEENS from my Carolina apiaries—progeny of my famous Porto Rican pedigreed-breeding stock. Elton Warner, Asheville, N. C.

FOR SALE—Golden Italian queens, 1 untested queen, \$1.25; 1 tested queen, \$3.00. J. F. Michael, Winchester, Ind.

THAGARD'S ITALIAN QUEENS produce workers that fill the supers quick. V. R. Thagard, Greenville, Ala.

FOR SALE—A few choice queens shipped in frame brood, \$4.00 each. Jes Dalton, Bordelonville, La.

THE A. I. ROOT CO. pure leather-colored queens, untested, 1, \$1.25; 6, \$7.00. Greenville Bee Co., Greenville, Ala.

FOR SALE—Bright Italian queens, \$1.50 each; \$14.00 per doz. Ready after April 15. T. J. Talley, Greenville, R. D. No. 3, Ala.

FOR SALE—Golden queens, untested, 1.15; 6 or more, \$1.10 each; select untested, \$1.60; 6 or more, \$1.50 each; safe arrival. Hazel V. Bonkemeyer, Randleman, R. D. No. 2, N. C.

FOR SALE—Leather-colored Italian queens, tested, until June 1, \$2.50; after, \$2.00; untested, \$1.25; 12, \$13.00. Root's goods at Root's prices. A. W. Yates, 15 Chapman St., Hartford, Conn.

FOR SALE—300 stands of bees in Standard hives, two-thirds equipped for comb honey and one-third for extracted honey. G. J. Westerik, Mt. Morrison, R. D. No. 1, Box 54, Colo.

BEEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

FOR SALE—Golden or three-banded queens, untested only. Order now for shipment June 1 or later. One, \$1.50; six, \$8.00; 12, \$15.00. Ross B. Scott, LaGrange, Ind.

FOR SALE—A. I. Root Co. strain of leather-colored Italians. Virgins only, May to October, 1, 75c; 10, \$7.00; 100, \$65.00. P. W. Stowell, Otsego, Mich.

FOR SALE—250 colonies Italian bees in 10-frame hives, free from disease. Also supers, combs and winter cases. Locations go with bees if wanted. Fred D. Lamkin, Poplar Ridge, N. Y.

FOR SALE—Five colonies of bees in double-walled Buckeye hives, all healthy. I am sick and can't take care of them. Will sell cheap. Alvin C. Vogt, Box 49, Kolze, Ills.

FOR SALE—Three-banded Italian queens, untested, \$1.25; 6, \$7.50; 12, \$14.00. Tested queens, \$2.50 each. The above queens are all select. Robt. B. Spicer, Wharton, N. J.

SHE-SUITS-ME queens, season of 1921. Untested Italians: After June 15, \$1.50 each, up to nine queens; 10 to 24 queens, \$1.40 each; 25 and up, \$1.25. Allen Latham, Norwichtown, Conn.

WILLOW DELL queens and nuclei stand the test with any. Queens, \$1.25; 2-fr. nuclei, \$5.00; 4-fr., \$8.00, including fine untested queen. Ready for delivery, receiver to return nuclei boxes collect. H. S. Ostrander, Mellenville, N. Y.

FOR SALE—20 colonies Italian bees. Good shape, in 8 and 10 frame modern hives. A. C. Gould, Weston, R. D. No. 4, W. Va.

FOR SALE—Hardy Northern-bred Italian queens and bees. Each and every queen warranted satisfactory. For prices and further information, write. H. G. Quirin, Bellevue, Ohio.

COLORADO QUEENS. Pure Italians. Our sunny climate and altitude produce the best there are. Write now for price list. C. I. Goodrich, breeder of fine queens, Wheatridge, Colo.

ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, \$1.50 each; 6 for \$8.00; tested, \$2.50 each; select tested, \$3.00. Prof. W. A. Matheny, Ohio University, Athens, O.

FOR SALE—Leather-colored Italian queens from Dr. Miller's breeder. Virgins, \$1.00; mated, \$1.50; tested, \$2.50. F. R. Davis, Standfordville, Dutchess County, N. Y.

AM now ready to mail out young queens of Dr. Miller strain leather-colored Italians, by return mail, at \$1.25 each. A few breeders for sale. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

FOR SALE—Vigorous leather-colored Italian queens, famous three-banded stock, untested queens, \$2.00 each; tested, \$3.00; untested, \$18.00 per doz. Order early. C. M. Elfer, St. Rose, La.

FOR SALE—Golden queens ready May 1; 1, \$1.50; 6, \$7.50; 12, \$14.00; 100, \$100. Virgins, 75c each. W. W. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE—Three-banded Italian queens, \$1.00 each, or \$10.00 per dozen. I ship nothing but the best. Safe arrival guaranteed. William C. Smith, Calhoun, Ala.

FOR SALE—Golden Italian queens, untested, \$1.15; 6 for \$6.50; 12 or more, \$1.00 each; tested, \$2.00 each; select tested, \$3.00 each; extra select tested, \$4.00 each. No bees for sale. D. T. Gaster, Randleman, R. D. 2, N. C.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, \$1.00 each; \$10.00 per dozen; \$75 per 100. Pure mating, safe arrival, and satisfaction guaranteed.

FOR SALE—2-lb. packages Italian bees and queens by parcel post, postage paid, delivery April 15, for \$8.50; 2-frame nuclei with Italian queen by express, not prepaid, delivery May 5, \$9.00. Otto J. Spahn, Pleasantville, N. Y.

WE believe we have the best Italian queens obtainable. Our new system is working wonders. Book your order now for 1921. Untested, \$1.50; tested, \$3.00; virgins, imported mothers, 50c. F. M. Russell, Roxbury, Ohio.

FOR SALE—Packages, nuclei, and pure-bred queens—queens from Root Home-bred breeders. Untested, \$1.50; tested, \$2.50; select tested, \$3.00. Safe arrival and mating guaranteed. The Southland Apiaries, Hattiesburg, Miss. W. S. Tatum, Prop.

WE are now booking orders for early spring delivery of two and three frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames. Sarasota Bee Co., Sarasota, Fla.

PURE ITALIAN BEEES—Not the cheapest, but the best we can grow, both golden and three-banded, with clean bill of health. Sure to please. Such as we use in our own yards. Untested, \$1.25; tested, \$2.00. J. B. Notestein, Bradentown, Fla.

FOR SALE—Highest grade three-banded Italian queens, Untested, each, \$1.25; 6, \$6.50; 12, \$12; 50, \$47.50; 100, \$90. Virgins, 45c each. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.



**FOR SALE**—100 colonies bees, 100 hives in flat, no frames, with equipment, \$1600; 120-acre farm with dwelling, \$1900. Will sell separate or together. B. F. Averill, Howardsville, Va.

**HAVING** purchased leather queens from the best honey-gathering stock obtainable, we will rear a few three-banded queens in yards set apart for that purpose, at the following prices: Untested, \$2.00; tested, \$5.00; select breeders, \$10.00. C. W. Phelps & Son, 3 Wilcox St., Binghamton, N. Y.

**THREE-BANDED** Italian only, that have been bred to a high standard of excellence. Never had disease in my apiaries. Safe arrival and satisfaction guaranteed. Untested queens, \$1.50; 12, \$15.00; tested queens, \$2.25; 12, \$25.00. Jul Buegeler, New Ulm, Texas.

**WHEN BETTER QUEENS** are raised Victor will raise them. Three-banded Italians only, mated, \$1.25 each; 6, \$7.00; 12, \$13.50; 100, \$110.00. Tested, \$3.00. Breeders, \$10 to \$25. Safe arrival guaranteed only in U. S. and Canada.

Julius Victor, Martinsville, N. Y.

**BUSINESS-FIRST QUEENS**—Are the bees that get the honey; are bright three-banded Italians; are gentle; have been inspected and found free from disease. Orders promptly filled. Untested, \$1.00 each; select untested, \$1.50; select tested, \$2.50. Write for prices on larger orders.

M. F. Perry, Bradentown, Fla.

**FOR SALE**—Six 10-frame colonies of Italian bees with young queens, guaranteed free from disease. Combs built on Hoffman frames with full sheets foundation, wired. These are strong, powerful colonies, all ready for the honey flow. Price, \$15.00 each, f. o. b. Port Chester. Van Collins, Riversville Road, Port Chester, N. Y.

**"QUEENS, QUALITY FIRST QUEENS."** High-grade, pure, three-banded and golden Italians. These queens are as good as can be bought; are gentle, prolific, and good honey-gatherers. I guarantee safe arrival and satisfaction. Why not try these and be convinced? Untested, \$1.00 each; 6, \$6.00; 12, \$12.00; 50, \$45.00. G. H. Merrill, Pickens, S. C.

**HUMMER QUEENS**—Untested, \$1.00 each; \$9.00 per dozen; tested, \$1.50 each; \$15.00 per dozen. A trial will convince you that they cannot be beaten. Safe arrival and satisfaction guaranteed. Nuclei at same old prices.

Geo. A. Hummer & Sons, Prairie Point, Miss.

**FOR SALE**—Italian queens: From July 1 to October 1, untested: 1, \$1.25; 6, \$7.00; 12, \$13.50; tested, \$2.00. I have a tested breeding queen from the A. I. Root Co., and will breed queens from her for those that prefer them to my old strain of hustlers. Safe delivery and satisfaction guaranteed. R. B. Grout, Jamaica, Vt.

**ITALIAN QUEENS**—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price after July 1, \$1.25 each; one dozen or more, \$1.00 each. Package bees a specialty. Send for circular. J. H. Haughey & Co., Berrien Springs, Mich.

**TESTED** Italian queens. These queens are descended from the celebrated J. P. Moore strain of leather-colored three-banded Italians. They are about one year old, have been tested out in full colonies, and are first class in every respect. Price \$2.00 each, or \$22.00 for 12. Safe arrival and satisfaction guaranteed. Elmer Hutchinson & Son, Lake City, Mich.

**QUEENS—A SUPERIOR STRAIN.** Bred from a queen whose colony gathered 200 lbs. honey while the other colonies did very little. Queens, untested, \$2.00 each; tested, \$3.00. Doolittle strain; queens, untested, \$1.25; tested, \$2.00. 40 years' experience in queen-rearing. Chestnut Hill Apiary, Aspers, Pa.

**PHELPS' GOLDEN ITALIAN QUEENS** combine the qualities you want. They are **GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE.** Virgins, \$1.00; mated, \$2.00; tested, \$5.00. Breeders, \$10 to \$20. Safe arrival guaranteed only in the U. S. and Canada.

C. W. Phelps & Son, Binghamton, N. Y.

**DAY-OLD QUEENS**—1, 50c; 100, \$50.00; 500, \$250.00. Untested queens, \$1.00 each. High quality three-banded Italians. Mailed in safety introducing cages. Delivery and satisfaction guaranteed in U. S. and Canada. Information in circular. Order early. James McKee, Riverside, Calif.

**BRED** strictly from the Dr. Miller granddaughter queens, \$1.25 each, 6 for \$7.25, 12 for \$14.00; selects, 25c each higher; tested, just double price of untested. Breeders, \$5.00; select breeders, \$7.50 to \$10.00 each; the best breeders, \$15.00 each. One frame nucleus with breeder for \$1.00 extra. Curd Walker, Jellico, Tenn.

**FOR** requeening, use Williams heavy laying Italian queens. They produce hardy, hustling, three-banded workers. Bred from the best disease-resisting strain, and priced in accordance with the present price of honey. Untested, \$1.25; 6 for \$6.50; 12 or more, \$1.00 each; tested, \$2.00. Satisfaction guaranteed. P. M. Williams, Ft. Deposit, Ala.

**NORTH CAROLINA** bred Italian queens of the Dr. C. C. Miller strain of three-banded Italian bees, gentle and good honey-gatherers, from July 1 until Oct. 1. Untested, \$1.25 each, \$12.00 per doz.; tested, \$2.00 each; select tested, \$3.00 each. Safe arrival and satisfaction guaranteed. L. Parker, R. F. D. No. 2, Benson, N. C.

**TO MY FRIENDS**—I am still doing business at the old stand, producing some very fine Italian queens, hardy, prolific, good honey-gathering stock. Untested, \$1.50; 6, \$8.00; 12, \$15.00. Write me for prices and date of delivery on quantities from 25 to 100. J. B. Hollopeter, Queen-breeder, Rockton, Pa.

**FOR SALE**—Until further notice we are offering our bright Italian queens, untested, at \$1.00 each; \$10.00 per dozen; \$75 per 100. We guarantee safe arrival, pure mating and reasonable satisfaction in U. S. and Canada. Cash must accompany all orders unless parties are known or satisfactorily rated. Graydon Bros., Greenville, R. D. No. 4, Ala.

**FOR SALE**—Three-band leather-colored Italian queens of the J. P. Moore strain, hardy, prolific, hustlers, no disease. Safe arrival and satisfaction guaranteed. Prompt attention given all orders. 1 untested, \$1.25; 12, \$13.50; 1 select untested, \$1.50; 12, \$15.00; 1 tested, \$2.00; 12, \$19.00; 1 select tested, \$2.50; 12, \$25.00. Write for circular and further information. J. M. Cutts, Route No. 1, Montgomery, Ala.

**CALIFORNIA ITALIAN QUEENS**, the old reliable three-banded stock that delivers the goods. Every queen actually **LAYING** before being caged, and fully guaranteed. I also guarantee safe arrival. **SPECIAL FALL PRICES**, select untested, 1, \$1.25; 6, \$7.00; 12, \$13.00; 25 to 99, \$1.00 each; 100 and over, 90c each. Package bees for next spring delivery. Circular free. California Apiaries, J. E. Wing, Prop., 155 Schiele Ave., San Jose, Calif.

**PRITCHARD QUEENS** (Three-banded Italians).—Price, untested, \$1.50 each, 6 for \$8.00; select untested, \$1.75 each, 6 for \$9.50. A liberal discount will be given on larger quantities. I will have a few choice virgins, tested, and breeders to spare; write for prices. Queens clipped free of charge on request. Acknowledgment and directions for introducing sent on receipt of order. Safe delivery and satisfaction guaranteed. Specify date of shipment desired, otherwise orders will be filled in rotation. Arlie Pritchard, Medina, Ohio.

## HELP WANTED.

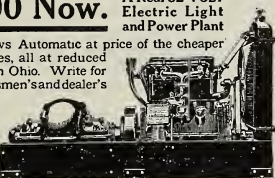
WANTED—One experienced man and students, clean habits, able-bodied and willing workers, as helpers with our more than 1000 colonies. Opportunity to learn the business from A to Z. 1920 crop 122,000 pounds. Theory also. Write immediately giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter. E. F. Atwater (former Special Field Agent in Beekeeping, U. S. Dept. Agr.), Meridian, Idaho.

**\$295.00 Now.**

A Real 32-VOLT  
Electric Light  
and Power Plant

See the Matthews Automatic at price of the cheaper plants. Six sizes, all at reduced prices. Made in Ohio. Write for particulars. Salesmen's and dealer's best opportunity

The Matthews  
Engineering Co.  
Ferry Street  
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**Raise  
Guinea  
PIGS  
FOR US!**

We need men and women, boys and girls everywhere to raise Guinea Pigs for us. We tell you where to get them, show you how and buy all you raise. Big opportunity for money making. Thousands needed weekly.

**Easy to Raise—Big Demand** No special knowledge, experience or equipment needed. **Large Profits** They breed the year round—are very prolific—require but little space or attention. Pay better than poultry or swine—cost less to house, feed, keep, easier raised—less trouble, market guaranteed. **FREE** Particulars, contract, and booklet how to raise **CAVIES DISTRIBUTING COMPANY** 3145 Grand Avenue, Kansas City, Mo. Largest Guinea Pig breeders and distributors in America.

**"Best" Hand Lantern**

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. **Big Profits. Write for Catalog.** **THE BEST LIGHT CO.** 306 E. 5th St., Canton, O.

# QUEENS

Quirin's Northern-bred hardy Italians now ready. Safe delivery and satisfaction guaranteed.

## PRICES OF BEES AND QUEENS.

(After July 1st)

	1	6	12
Untested	\$.150	\$ 8.00	\$15.00
Tested	2.00	10.00	18.00
2-comb Nuclei	6.00	32.00	60.00
3-comb Nuclei	8.00	45.00	85.00
8-fr. Colony	12.00	70.00	
10-fr. Colony	15.00	85.00	
Breeders, fair		5.00	
The very best, each		10.00	

Add the price of the queen wanted with nuclei or colony. This is our 30th consecutive season at queen-rearing.

Address all orders to

**H. G. QUIRIN**

BELLEVUE, OHIO

# "QUEENS OF QUALITY"

3-band Italians only.

Untested, \$1.25 each; six for \$7.00; \$12.00 per dozen.

We are now shipping by return mail.

**J. I. BANKS**

Dowelltown, Tenn.

## High Quality Queens at Reduced Prices

Three-banded Italians, reared from best hustlers, non-swarming, gentle, and prolific. Satisfaction guaranteed. Health certificate with each shipment.

Untested	1 to 10, \$1.00 each; over 10, \$0.90 each
Select Untested	1 to 10, 1.25 each; over 10, 1.15 each
Tested	1.75 each

**FRANK BORNHOFFER, R. R. 17, MT. WASHINGTON, OHIO**



## Talks to Beginners.—Continued from page 442.

and will gnaw away a part of the foundation as well as coat it over with propolis, thus rendering it unfit to use next season. At this time the bee-escape is especially useful in taking off either comb-honey supers or extracted-honey supers, for it is now more difficult to drive the bees out of comb-honey supers with smoke and to remove the combs of honey from extracting supers one at a time. Shaking and brushing off the bees is not an easy task for the beginner when robbers are troublesome.



## Queens

Write for our catalog of high-grade Italian Queens. Pure mating and safe arrival guaranteed.

### Prices for 1921.

1 to 4 inclusive \$3.00 ea.  
5 to 9 inclusive 2.90 ea.  
10 or more... 2.80 ea.  
Breeders .... 12.00 ea.

## Jay Smith

Route Three  
Vincennes, Indiana.

## INDIANOLA APIARY

will furnish 3-banded Italian bees and queens:  
Untested queens, \$1.00 each; tested, \$1.50 each.  
One pound bees, no queen, \$2.00. No disease.

J.W.SHERMAN, VALDOSTA, GA.

## NEW ENGLAND

BEEKEEPERS will find a complete stock of up-to-date supplies here. Remember we are in the shipping center of New England. If you do not have a 1921 catalog send for one at once.

H. H. Jepson, 182 Friend St., Boston 14, Mass.

## GOLDEN OR THREE-BAND QUEENS.

Untested, balance of season, \$1.00 each; doz. \$10.00, or \$80.00 per hundred. Virgins, 50c each, or \$40.00 per hundred. All orders filled promptly or parties notified when to expect shipment; satisfaction.

R. O. COX, Rt. 4, Luverne, Ala.

## PATENTS

Practice in Patent Office and Court.  
Patent Counsel of The A. I. Root Co.

Chas. J. Williamson, McLachlan Building,  
WASHINGTON, D. C.

**NEWMAN'S** Bred From the Best. Absolutely First Quality  
**ITALIAN QUEENS** and fully guaranteed. No disease. Satisfaction and safe arrival.  
Untested, \$1.50; 6, \$8.00; 12, \$15.00. Select Untested, \$2.00; 6, \$10.00. 12, \$19.00. Circular free.

**A. H. NEWMAN, Queen Breeder**

MORGAN, KY.

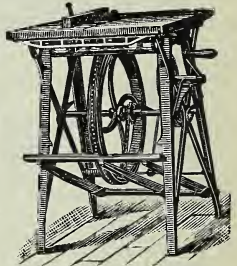
## BARNES' Hand and Foot Power Machinery

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

### Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO  
545 Ruby Street  
ROCKFORD, ILLINOIS



## MASON BEE SUPPLY COMPANY

### MECHANIC FALLS, MAINE

From 1897 to 1921 the Northeastern Branch of The A. I. Root Company

Prompt and Efficient Service  
BECAUSE—Only Root's Goods are sold.  
It is a business with us—not a side line.  
Eight mails daily.  
Two lines of railway,  
If you have not received 1921 catalog send name at once.

## I. F. MILLER'S STRAIN ITALIAN QUEEN BEES.

Northern bred for business; from my best SUPERIOR BREEDER (11 frames brood on April 7), gentle, roll honey in, hardy, winter well, not inclined to swarm, three-banded, 27 years' breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. Untested, \$1.50; 6, \$8.00; 12, \$14.00. Select, \$1.75; 6, \$9.00; 12, \$17.00.

### I. F. MILLER

Brookville, R. D. No. 2, Pa.

## Queens—Rhode Island—Queens

Italian Northern-bred queens. Very gentle and hardy. Great workers. Untested, \$1.25 each; 6 for \$7.00. Circular on application.

Queens delivered after June 1.

O. E. TULIP, Arlington, Rhode Island

56 Lawrence Street.

## STUTT'S ITALIAN QUEENS

are supreme queens; ready June 1. Untested, \$1.25; 6, \$6.50; 12, \$12.50. Select untested, \$1.50; 6, \$8.00; 12, \$15.00. Pure mating and safe arrival guaranteed.

ALFRED A. STUTT, Lincoln, Ills.

## Leininger's Strain of Italian Queens

Have been carefully selected and bred for the past 38 years. Our queens are reared from selected stock taken from the best strains of Italian bees known. Neither trouble nor expense is spared to produce queens of unsurpassed quality. They have proved themselves to be not only great honey-gatherers but also very resistant to brood diseases.

We will have 400 select tested queens that we will sell as long as they will last at the following special prices:

### PRICE LIST OF QUEENS.

Untested, \$1.50 each; 6 to 25, \$1.40 ea.  
Sel. Tested, \$3 each; 6 to 25, \$2.75 ea.

Breeding queens, \$10.00 each.

Every queen we send out we will guarantee to give fullest satisfaction.

**FRED LEININGER & SON**  
DELPHOS, OHIO.

## Lower Prices

Order from these quotations.

Write for complete price list.

Untested Italian Queens, each.	\$ 1.25
Untested Italian Queens, per 100	98.75
Two pounds bees with queen...	5.75
Sections, No. 1 grade.....	12.85
Sections, No. 2 grade.....	12.25
Hoffman brood-frames, per M.	65.00
5-lb. friction top pails (200)...	20.50
Cases of 5-gallon cans.....	1.35
5-gallon cans in bulk.....	41.75
Double-tier cases for comb honey, per 100.....	50.00

### "Airco" Comb Foundation.

	1 lb.	25 lbs.	100 lbs.
Medium Brood....	\$0.85	\$0.80	\$0.75
Light Brood.....	.87	.82	.77
Thin Super .....	.90	.85	.80
Extra thin super. .	.92	.87	.82

"Airco Your Bees"

**THE FOSTER HONEY & MERCANTILE CO.**  
BOULDER, COLORADO.

"Foster Your Business"

## GOOD WILL AND GOOD QUEENS

ARE BACK OF

## FOREHAND'S THREE BANDS

THE THRIFTY KIND

Good will has made our success.  
Our good queens will make your success.

These two forces working together have made it possible for us to serve the beekeepers for over a quarter of a century.

Hearty support for twenty-nine years.

Good Queens for twenty-nine years.

Each is the proof of the other. Both are proof that you will not make a mistake when you requeen with

Forehand's Three Bands—the bees that are **surpassed by none but superior to many.**

Good queens are the success of an apiary. Your success is ours. We try to help you in every way. We give you good queens and good service. We guarantee pure mating, safe arrival, and satisfaction.

We are now booking orders for immediate delivery.

Write for circular giving full information on bees and queens.

Pure mating and satisfaction guaranteed the world over. Safe arrival in U. S. and Canada.

<b>Prices:</b>	1	6	12
Untested .....	\$1.25	\$6.50	\$11.50
Select Untested .....	1.50	7.50	13.50
Tested .....	2.00	10.00	18.50
Select Tested .....	2.75	15.00	27.00

Write for prices in large quantities.

**W. J. FOREHAND & SONS**  
FORT DEPOSIT, ALABAMA



## NOTICE!

### Pritchard Queens are not just common queens named, but A NOTED STRAIN

The result of years of careful breeding and selection.  
Reared and offered for sale by

**ARLIE PRITCHARD**

Medina, Ohio.

See my classified ad, page 450 for prices and guarantee.

Established 1885.

Write us for catalog.

## BEEKEEPERS' SUPPLIES



The Kind You Want and the Kind  
That Bees Need.

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you; information given to all inquiries. Beeswax wanted for supplies or cash.

**John Nebel & Son Supply Co.**  
High Hill, Montgomery Co., Mo.

## Colonies of Italian Bees

in good standard Danzenbaker, Langstroth, and Jumbo hives at reduced prices during July, August, and September. All in all respects. Write for prices. Satisfaction guaranteed.

**VAN WYNGARDEN BROS.**

R. F. D. No. 4, Hebron, Indiana.

## LARGE, HARDY, PROLIFIC QUEENS

Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness, and color. After June 1st: Untested queens, \$1.50 each; 6 for \$8.00; 12 or more, \$1.40 each; 25 or more, \$1.25 each. Tested queens, \$3.00 each; six for \$16.00.

Buckeye Bee Co., Justus, Ohio.



## The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog.

AGENTS WANTED EVERYWHERE.

**THE BEST LIGHT CO.**

306 E. 5th St., Canton, O.

## Hubam Clover.—Continued from page 446

tween 4 and 5 feet, while medium red clover under exactly the same conditions made a growth of only 5 inches and biennial sweet clover 14 inches.

In order to meet the widespread demand for seed of this clover the Iowa Experiment Station offered last spring to give small samples of seed to any farmer in the United States who would send a stamped, self-addressed envelope to carry the sample of seed to him. As a result over 47,000 samples of seed were distributed. Six or seven thousand additional requests for seed were received, but owing to the fact that no postage was enclosed the seed was not sent.

I want to call particular attention to the statement above of SIX OR SEVEN THOUSAND applications for seed not only without an addressed envelope, but without any postage; and, by the way, this reminds me many times down in my Florida home good friends asked for seed, or something I have written up, and not only omitted postage which I don't care so much about, but they didn't even send an addressed envelope or postal card. Then I am obliged to hunt the letter sometimes from beginning to end to find out *who* sent it and *where* they live.

## World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest offer ever made.

### Edwards "Reo" Metal Shingles

cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot, fire, rust, lightning proof.



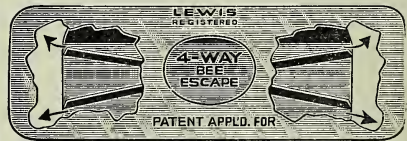
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Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183

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Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles. **THE EDWARDS MFG. CO.,** 733-783 Pike St., Cincinnati, O.

**FREE  
Samples &  
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## LEWIS 4-WAY BEE ESCAPES



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Made by

**G. B. Lewis Company, Watertown, Wis., U.S.A.**

Sold only by Lewis "Beeware" Distributors.

## ROOT'S BEE SUPPLIES

Carload stocks at Ohio's distributing center. Orders filled the day they come in. Save time and freight by ordering from  
**A. M. MOORE, Zanesville, Ohio**  
 22½ S. Third Street.

## QUEENS

Now for the profit from good queens and strong colonies.

### GENTLE THREE-BAND ITALIANS

Untested, \$1.25. 12 or more, write for price.

Prompt Service.

**D. W. HOWELL**  
 Shelman, Ga.

## QUEENS

Select Three-Banded Italians. I have one of the most modern queen-rearing apiaries in the South, and am breeding from the best Italian stock to be found. Pure mating, prompt and safe arrival guaranteed.

	1	6	12	50
Untested ..	\$1.25	\$7.00	\$13.00	\$50.00
Tested ....	3.00	16.00	30.00	

Write for descriptive circular and prices on queens in lots of 100 or more.

**HARDIN S. FOSTER,**  
 Dept. G, Columbia, Tenn.

## QUEENS OF MOORE'S STRAIN

### OF ITALIANS PRODUCE WORKERS

*That fill the super quick  
 With honey nice and thick.*

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. Untested queens \$1.50; 6, \$8.00; 12, \$15.00. Select untested \$2.00; 6, \$10.00; 12, \$19.00. Safe arrival and satisfaction guaranteed.

Circular free.

I am now filling orders by return mail.

**J. P. MOORE, Queen Breeder**  
 Route 1, Morgan, Kentucky

## MOTT'S NORTHERN-BRED ITALIAN QUEENS.

For July: Sel. Untested, \$1.25 each; \$15.00 per doz. Sel. guaranteed pure-mated or replace, \$1.75 each; \$18.00 per doz. Sel. Tested \$2.50. Filling orders by return mail now with the aid of my Southern branch. Plans "How to Increase" and "Introduce Queens," 25c.

**E. E. MOTT, Glenwood, Mich.**

## Golden and Three-Banded Queens

### Northern Queens for Northern Beekeepers

THE DEPARTMENT OF CONSERVATION  
 STATE OF INDIANA  
 Division of Entomology  
 INDIANAPOLIS, IND.

Indianapolis, Jan. 17, 1921.

Mr. Ross B. Scott, Lagrange, Ind.

Dear Mr. Scott: I am pleased to learn that you anticipate enlarging your queen-rearing department, since the increased production of high-grade queens, such as you have been sending out, is of vast importance.

During the past year I have had the opportunity of seeing a large number of queens, and their bees, bought of you; and I commend you for your careful selection, care in shipping, and excellent quality of stock furnished your customers.

Last season I helped to introduce 147 golden Italian queens, bought of you by members of a county association; they were a beautiful lot of queens; all arrived in fine condition; and, as they were to be received on three different days, the fact that they arrived on exactly the days you promised is a feature of efficiency much appreciated by beekeepers. Wishing you continued success, I am, yours very truly,  
 C. O. YOST, Chief Inspector Apiaries.

Untested queens till July 15: One, \$1.50; six, \$8.00; dozen, \$15.00. Safe arrival and satisfaction.

**ROSS B. SCOTT, Lagrange, Indiana**

## Buy Your Bee Supplies Now

Take advantage of early-order discounts by ordering NOW. We guarantee to please you. "Prompt service and the very best" is our motto. *We want your beeswax and old comb.* Highest cash and trade prices offered. Texas beekeepers should write **A. M. HUNT,** Goldthwaite, Texas.

Manufactured by

### Leahy Manufacturing Company

95 Sixth St., Higginsville, Missouri.

Write for FREE catalog. It is to your interest.

## QUIGLEY'S QUEENS AND BEES

Three-banded Italians are bred from ideal colonies by double grafting, producing queens of superior quality; 20 years building this strain from the best honey-producing colonies. No disease; 35 years in this location.

Tested, each, \$2.00; untested, each, \$1.25; \$12.00 per dozen.

Write for prices on nuclei, 2-lb. packages and full colonies.

Purity and satisfaction guaranteed. Send for circular.

**E. F. QUIGLEY & SON**  
 Unionville, Mo.



## Spicer's Three-Banded Italian Queens

now ready to mail. These queens are bred so as to have all the desired qualities, hustlers, hardy, and gentle.

	1	6	12
Untested queens	\$1.25	\$7.50	\$14.00
Tested queens	2.50	15.00	28.00

I do not list select queens, as the above are all select. Safe arrival and satisfaction guaranteed.

**ROBERT B. SPICER**  
Wharton, N. J.

## Three-Band and Golden QUEENS

That produce hustling bees. Bred to fill the supers. From the finest breeding strains obtainable. Hustlers, long-lived, and as beautiful in size and color as can be. Special price for summer and fall, \$1.50 each; 25 at \$1.25 each. Tested, \$2.50 each. This is your time to requiren.

**DR. WHITE BEE CO.**  
SANDIA, TEXAS.

## THAGARD'S ITALIAN QUEENS —BRED FOR QUALITY—

My three-banded queens are bred from imported stock; they are hardy, prolific, disease-resisting and honey producers. A good queen is the life of any colony; head your colony with some of our queens, place our queens against any queens you may obtain anywhere, and **note the results**. I do not breed for **quantity**, but breed for **quality**. My queens have proven this to thousands of beekeepers that have tried them. Book your order now for July to October delivery.

July 1 to Oct. 1:	1	6	12
Untested .....	\$1.25	\$6.50	\$12.00
Selected Untestd ..	1.50	8.00	15.00
Tested .....	2.00	10.00	20.00
Select Tested ....	3.00	16.50	30.00

Safe arrival, pure mating, and perfect satisfaction guaranteed. Circular free.

**V. R. THAGARD**  
GREENVILLE, ALABAMA



## THE OLD RELIABLE THREE-BANDED ITALIANS



Our Italians are of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, very resistant to foul brood, and the best of honey-gatherers. We have sold a good many queens to parties who are using them in stamping out foul brood. If you want the very best quality for the lowest price, send us your orders at once. Will guarantee safe arrival in the United States and Canada.

July to November:	1	6	12
Untested .....	\$1.25	\$6.50	\$12.50
Select Untested .....	1.50	8.00	15.00

No nuclei or pound packages of bees for sale.

**W. T. PERDUE & SONS**

Route 1, Fort Deposit, Ala.

**3-BANDED  
QUEENS**

## QUEENS OF UNSURPASSED QUALITY

**GOLDEN  
QUEENS**

Our queens are reared from selected stock taken from the best strains of Italians known. Neither trouble nor expense is spared to produce queens of unsurpassed quality. They have proved themselves to be not only great honey gatherers but also very resistant to disease, especially European foul brood. Every queen sent out by us we guarantee to give fullest satisfaction.

### Price List of Our Queens:

Untested .....	\$1.25 each;	6 to 25, \$1.10 each;	25 and up, \$1.00 each
Select Untested ...	1.50 each;	6 to 25, 1.40 each;	25 and up, 1.25 each
Tested .....	2.25 each;	6 to 25, 2.10 each;	25 and up, 2.00 each
Select Tested ....	2.75 each;	6 to 25, 2.50 each;	25 and up, 2.25 each

Wings clipped free of charge. Safe arrival we guarantee. We have no disease in our apiaries.

**OHIO VALLEY BEE CO., BOX 307, CATLETTSBURG, KY.**

A BIG BARGAIN IN  $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{7}{8}$ 

## Sections



A Grade, \$6.90 per 500

B Grade, \$6.65 per 500

We have an odd lot stock A and B grade sections not manufactured for our regular grade, size  $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{7}{8}$ . We recommend both the A and B grades as a bargain. The A grade is strictly fine, and B grade is quite as good except for color and imperfections. Stock limited and we urge quick action. A grade in crates of 500 at \$6.90, B grade at \$6.65. Available only in crates of 500.

THE A. I. ROOT COMPANY.  
224-230 W. Huron St., Chicago, Ill.



## NORMAN BROS.' QUEENS

Mr. Beekeeper, if you want good quality, quick service, prompt attention, and perfect satisfaction, TRY NORMAN BROS. pure three-banded Italians and see for yourself. We are not going to say that we have the best in U. S. A., but we do say that we have as good as can be bought for the money. Our bees are hardy, gentle, prolific, disease-resisting and honey-gatherers. Orders filled promptly by return mail or your money refunded. We guarantee pure mating, freedom from all diseases, and safe arrival in U. S. A. and Canada. Remember that you take no risk when you deal with us. Isn't that enough said?



Prices for July: 1      6      12				
Untested Queen...	\$1.50	\$7.50	\$13.50	Tested .....\$3.00 each
Select untested...	1.75	8.25	16.00	Selected Tested ..... 3.50 each

NORMAN BROTHERS' APIARIES, Naftel, Alabama

# BANKING BY MAIL AT 4%

**PROGRESS** means going forward all the time.  
You cannot afford to stand still.

Ready money enables you to progress. Build up your "Future Opportunity" fund in this bank. Our BANKING BY MAIL booklet explains. We will gladly forward.

**THE SAVINGS DEPOSIT BANK CO.**  
A.T. SPITZER, Pres.  
E.R. ROOT, Vice Pres. E.B. SPITZER, Cash. **MEDINA, OHIO**



# QUEENS

## FROM SELECT BREEDING

21 Years of Experimenting. We have nothing but the very best.

### 3-BAND ONLY

Price Cash With Order.

Before July 1st.

Untested .....	\$1.50
Selected .....	2.25
Tested .....	3.00
Selected .....	3.50

*Orders filled in rotation.  
Write for prices in large  
quantities.*

Did you get what you were looking for when you bought your last year's Queens? If not, try one that will please you. My queens are reared on a new system, large and prolific, surpassed by none but superior to many. No complaint last year.

**F. M. RUSSELL**

IMPORTER

ROXBURY, OHIO R. F. D. No. 2



## Major's Queens Are Selected



Bright three-banded Italian queens. They are northern-bred; they are hardy and will see you next spring.

Having bred up my bees during the past eighteen years from the very best breeders obtainable thruout the United States, I now have a strain surpassed by none. They are the kind that clean up European foul brood and add to your banking account.

Pure mating, safe arrival and satisfaction guaranteed. Orders filled by return mail. Queens' wings clipped according to your directions.

Price: \$1.50 each, or \$15 per doz. Tested, \$3.00 each; virgins, 50c each.

**H. N. MAJOR**

SOUTH WALES, N. Y.

## QUEENS <sup>A</sup>/<sub>D</sub> BEES

We have one of the most modern queen-rearing outfits in the United States, and are breeding from new imported Italian blood. We produce **QUALITY** instead of **QUANTITY**.

A limited number of orders for spring delivery will be accepted at the following prices:

Quantity	1	6	12	24
Untested .....	\$2.00	\$11.40	\$21.60	\$40.80
Sel. Untested..	2.25	12.80	24.30	45.90

Special price of \$1.50 each on untested queens for June delivery in lots of 12 or more, if booked in advance.

We are also prepared to furnish full colonies, nuclei, and pound packages. Write today for prices.

**The A. I. Root Co. of Texas**  
P. O. Box 765,  
SAN ANTONIO, TEXAS.

## Take Notice, Beekeepers

We have for June delivery 500 packages bees with untested queens at reduced prices. When you buy bees from us you know they will arrive in good condition. This is our eleventh successful year in shipping bees to all parts of U. S. and Canada. Remember you take no chances. We stand good the loss. One and two lb. packages are shipped on a standard Root-Hoffman brood-frame with brood and honey, which insures safe arrival.

One pound bees and queen....	\$4.00
Two pounds bees and queen....	5.00
Two-frame Nucleus and queen...	4.75
Three-frame Nucleus and queen.	5.50
Untested queen without bees, ea.	1.25
12 for .....	12.00
Selected Tested, each .....	1.75

The above stock is three-banded only. We ship by express only. We guarantee no disease and safe delivery.

Where satisfaction comes from.

**OSCAR MAYEUX**

Lock Box No. 15.  
HAMBURG, LA.

## Quality Bee Supplies From a Reliable House

¶ Without fear or favor I place my BEE SUPPLIES and SERVICE before you.

¶ It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S goods. Quality is first—save time when you put your goods together by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

¶ I am ready to meet your urgent needs. Send for my latest price-list.

¶ Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames, and eight-frame D. T. supers for 4x5 sections. At cost price, write for quotations.

**Charles Mondeng**

146 Newton Ave. N. &  
159 Cedar Lake Road.

MINNEAPOLIS, MINNESOTA.

## Beeswax Wanted

In big and small shipments, to keep Buck's Weed-process foundation factory going. We have greatly increased the capacity of our plant. We are paying higher prices than ever for wax. We work wax for cash or on shares.

### Root Bee Supplies

Big stock, wholesale and retail. Big catalog free.

**Carl F. Buck**

The Comb-foundation Specialist

August, Kansas

Established 1899.



## Completely Destroys the Weed Growth

More than that, the BARKER breaks the hardest crust into a level, porous, moisture-retaining mulch—all in the same operation.

A ten-year-old boy can run it—do more and better work than ten men with hoes. Saves time and labor, the two big expense items.

## BARKER WEEDER, MULCHER AND CULTIVATOR

Eight reel blades revolve against a stationary underground knife—like a lawn mower. **BEST WEED KILLER EVER USED.** Works right up to plants. Cuts runners. Aerates the soil. Has leaf guards, and shovels for deeper cultivation—3 garden tools in 1.

### FREE ILLUSTRATED BOOK.

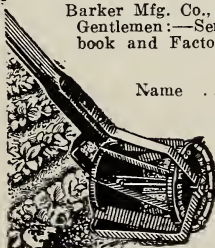
Tells how gardeners and fruit-growers everywhere are reducing their work; increasing their yields.—How to bring growing plants through a dry season.—How to conserve the moisture and force a larger, more rapid growth. Send TODAY for this free, illustrated book and special Factory-to-User offer.

### BARKER MANUFACTURING COMPANY

Dept. 23.

David City, Neb.

Barker Mfg. Co., Dept. 23, David City, Neb. Gentlemen:—Send me postpaid your free book and Factory-to-User offer.



Name .....

Town.....

State .....

R. F. D. or Box.....



*Southern Headquarters*

## Reliable Three-Banded Italian Queens



For several years our queens have been used and recommended by a number of the foremost beekeepers in the U. S. and Canada. We cannot afford to disappoint them, and we *will not* disappoint you.

Having several hundred colonies in outyards to select breeding stock from, and large well-equipped queen-rearing yards, we are sure we offer you something good. We pay special attention to honey-gathering qualities, but do not forget gentleness, beauty, etc. Our queens are good to look at, and their bees a pleasure to work with.

**PRICES:** Untested, \$1.25 each; six, \$7.50; twelve, \$13.50; fifty or more, \$1.00 each. Tested, \$2.00 each.



Prompt service, safe arrival of queens, and satisfaction, we guarantee. Any queens that prove to be mated will be replaced free of charge. No foul brood or other contagious bee disease has ever been in our vicinity.

W. D. ACHORD, Fitzpatrick, Alabama.

## "Order Supplies in Advance of Needs"

*---says a well-known beeman.*

"Supplies should always be on hand in advance of needs. A dozen reasons may cause delay, and valuable time and money may be lost. This must be borne in mind if we would reap the largest possible harvest of honey. I have seen a colony fill a super with honey in five days. If we had waited a week or ten days for sections or foundation, we would have lost heavily during the honey flow."

Order "**falcon**" Queens and bee supplies for best results. Used by successful beemen for over 40 years. Shipped anywhere; safe arrival guaranteed.

W. T. Falconer Mfg. Co., Falconer, (NEAR JAMESTOWN) N. Y., U.S.A.

*"Where the best beehives come from."*

Distributor for the Central West, WM. H. RODMAN, 2027 Main Street, Gateway Station, Kansas City, Mo.

## SECTIONS! SECTIONS!! SECTIONS!!!

While our present stock lasts we give the opportunity to buy No. 2 sections at a big reduction. We offer as follows:

No. 2— $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{7}{8}$  2-beeway Sections, per thousand... \$8.00

No. 2— $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$  Plain Sections, per thousand.... 7.00

No. 2— $4 \times 5 \times 1\frac{3}{8}$  Plain Sections, per thousand.... 7.00

We are pleased to announce a big reduction in Bee Supplies. Send us a list of the goods you wish to purchase and we will quote you our new reduced prices.

**AUGUST LOTZ COMPANY, BOYD, WIS.**



## SELECT THREE-BANDED ITALIANS OF THE HIGHEST QUALITY **ONE** GRADE



800 honey-gathering colonies from which to select the very best breeders. No one has better Lees than 1. Can make prompt delivery by return mail. I have not yet disappointed a customer.

**PRICES:** Untested (to July 1): each \$1.50; 12 or more \$1.25 each. After July 1, 1 to 49 \$1.25 each, 50 or more, \$1.00 each. Tested (to July 1), each \$2.00. Breeders (to July 1), \$25.00 each.

Pure mating, safe arrival, and satisfaction guaranteed. It is left with customer to say what is satisfaction.

My customers say my queens stand the northern winters. They are bred up for this, combined with the highest honey-gathering qualities and prolificness.

A new customer from Missouri, where you have to show them writes: "The dozen queens arrived promptly. They are the most beautiful I ever saw."—(Name on request.)

Another one from the same state writes: "Your 100 2-lb. packages averaged 90 pounds surplus honey per colony, 10 pounds more per colony than the other 2-lb. packages purchased elsewhere."—H. H. Thale, Durham, Mo.

Now listen to this, from Ontario, Canada: "Bees and queens purchased of you last season all wintered without a single loss. Save me 50 untested queens for May delivery."—(name on request.)

**JASPER KNIGHT, Hayneville, Ala.**

## QUEENS FULL COLONIES AND NUCLEI QUEENS

Our bees are hustlers for honey, prolific, gentle, very resistant to European Foul Brood, our customers tell us. For years we have been shipping thousands of queens and pounds of bees all over the U. S. A. and Canada. We are continually getting letters with statements such as the following: "Well pleased with your stock," "Best we ever had," "The bees we got from you are the tops (best) we have in our 225 colonies," "Bees arrived in fine shape, well pleased," etc., etc. Write for circulars giving details, etc. We are quoting a lower price for balance of the year, but will still hold up the high standard of quality.

I have a good proposition for 2 or 3 Northern beekeepers that would like to come South this fall. Write for particulars.

### QUEENS AFTER JULY 1st, BALANCE OF THE YEAR:

Untested . . . . \$1.35 each; 25 or more, \$1.00 each	1 lb. of bees \$2.25 each; 25 or more, \$2.13 each
Select Unt. . . 1.50 each; 25 or more, 1.25 each	2 lbs. of bees 3.75 each; 25 or more, 3.56 each
Tested . . . . . 2.25 each; 25 or more, 1.75 each	3 lbs. of bees 5.25 each; 25 or more, 4.98 each
Select Tested.. 2.75 each; 25 or more, 2.00 each	Add price of queen wanted when ordering bees.

*Safe arrival guaranteed within six days of here.*

## NUECES COUNTY APIARIES

E. B. AULT, Prop.

CALALLEN, TEXAS

## QUEENS BY SELECTION

### BEEES IN NUCLEI AND FULL COLONIES ONLY

Our system of Queen Rearing enabled us to stabilize our prices early, therefore we were not forced to make drastic cuts to get business enough to keep us busy. Another reason is that we have always been satisfied with a fair margin of profit. When it comes to quality we take no back seat; complimentary letters from satisfied customers are proof that our guarantee holds good.

By always starting far more cells than we expect to use, and selecting only the best for introduction, and killing any queens that emerge defective or otherwise below par, we have no culls to send out. We have used breeders of many popular strains, and those that we have selected for use are reproducing themselves most satisfactorily. Drones reared from queens that are the pick of our outyards.

Truly, queens by selection, and we offer them to you at prices that will make them the best investment you can make, whether used for making increase or merely to requeen.

Prices for balance of season as follows: Select untested, \$1.25 each; 25 or more, \$1.00 each. Tested, \$1.75 each; Select Tested, \$3.00 each. Breeders, \$5.00 each.

Nuclei, with select untested queens, 2-frame, \$5.00; 3-frame, \$6.50; 8-frame colony, \$15.00; 10-frame, \$17.50, with young tested queens, in new hives, combs drawn from full sheets.

*Safe arrival and satisfaction guaranteed.*

**JENSEN'S APIARIES, CRAWFORD, MISS.**

R. F. D. NO. 3.



*Money Saved**Time Saved*

## Bee Supplies

Root's Goods With Weber's Service

*Send us a list of your wants, and we will quote prices  
that will save you money.*

C. H. W. Weber & Co.

2163-65-67 Central Ave.

Cincinnati, Ohio

## Forehand's Queens

*They Satisfy---Why?*

Because of 28 years of experimental work, with both queen-breeding and honey-production. With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none BETTER. Why experiment? Take advantage of the life experience of my breeders.

OUR SERVICE STATION—We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

**I BREED  
THREE-BANDED  
ITALIANS  
ONLY.**

June 1 to Nov. 1.	1	6	12
Untested .....	\$1.50	\$ 7.50	\$13.50
Selected Untested.	1.75	9.00	16.50
Tested .....	2.50	13.00	24.00
Selected Tested ..	3.00	16.50	30.00

Bees in two-pound packages, 1 package, \$6.00; 25 or over, \$5.80; 50 or over, \$5.40; 100 or over, \$5.00, without queens. Will begin shipping bees as early as weather will permit.

Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival, and perfect satisfaction guaranteed. Write for circulars and large-order discounts. Foreign orders at receiver's risk.

**N. Forehand, Ramer, Alabama**

## Guaranteed Hubam Clover Annual White Sweet Clover

(Hughes Variety)

All of the annual white sweet clover seed of the 1920 crop was exhausted before May 1st. But seed of an early strain, planted in Texas after Christmas, 1920, began to reach maturity early in May. This seed is now available.

You can get it in time to test it this year. It blooms for bees in three or four months, and continues to bloom for a much longer period than most plants used for the purpose. Many beekeepers have declared it to be the greatest clover yet tried. It combines quick growth with an unusual wealth of honey-making blooms. It is also a legume that returns a large amount of plant food to the soils. It has frequently been described editorially by Gleanings in Bee Culture.

Big profits are possible growing seed for your neighbors, and the farmers and beekeepers of your locality.

The price is now \$5.00 a pound. Order from the Henry Field Seed Co., Shenanodah, Iowa, or direct from the grower who guarantees.

*The De Graff Food Company, Seed Dept. 303, De Graff, Ohio*

## HONEY! HONEY! HONEY!

There are many beekeepers who do not produce enough Honey to supply their trade. Many of them are buying their extra needs from us. The particular advantage we can offer is a uniform Honey at all times at a reasonably low price. Our special blend of Fancy Honey is of a fine mild flavor, and is always uniform. This honey is liquid in various-sized tins. For those who prefer it we can supply any grade of the best-flavored Table Honeys, granulated in 60-lb. tins.

### SPECIAL BLEND OF FANCY HONEY (Liquid)

60-pound Tins, 2 per case.....	14c per lb.
10-pound Tins, 6 per case.....	16c per lb.
5-pound Tins, 12 per case.....	17c per lb.
2½-pound Tins, 24 per case.....	18c per lb.

Water White Sweet Clover Honey, 60-lb. Tins, granulated, 13c lb.

Calif. Extra L. A. Sage Honey, 60-lb. Tins, granulated, 12c lb.

### GLASS AND TIN HONEY CONTAINERS

2½-lb. Cans, 2 dozen reshipping cases.....	\$1.45 case; crates of 100, \$ 6.50
5-lb. Pails (with handles), 1 dozen reshipping cases	1.35 case; crates of 100, 8.30
10-lb. Pails (with handles), ½ dozen reshipping cases	1.10 case; crates of 100, 12.75
60-lb. Tins, 2 per case—NEW,	\$1.30 case; USED, 50c.

### WHITE FLINT GLASS, WITH GOLD LACQD. WAX LINED CAPS.

8-oz. Honey Capacity, Cylinder Style .....	\$1.50 per carton of 3 dozen
16-oz. Honey Capacity, Table Jar Service.....	1.40 per carton of 2 dozen
Quart or 3-lb. Honey Capacity, Mason Style .....	1.00 per carton of 1 dozen

**Hoffman & Hauck, Inc., Woodhaven, New York**



## Quality Queens at Quantity Prices

BREED THREE-BAND ITALIANS ONLY

Queens are reared from mothers whose colonies are GENTLE, HARDY, and as HONEY GATHERERS will compare with any.

I rear all my queens personally by the latest and most approved methods, which insures queens that are capable of duplicating the excellent characteristics of their mothers. The foundation for your next season's crop should be laid NOW by heading your colonies with my young vigorous queens.

### 1921 PRICES.

	1	6	12
Untested .....	\$1.50	\$8.00	\$15.00
Select Untested.	1.75	9.25	16.80
Select Tested ..	3.00	16.50	30.00
Breeding queens with 2-frame nuclei .....	\$15.00 each		

You take absolutely no risk in ordering my queens for I guarantee satisfaction and safe arrival in U. S. A. and Canada.

I have pleased others and can please you as well. Please give shipping date, otherwise your order will be filled in rotation. Foreign shipments at receiver's risk. Health certificate with each shipment.

I sell no bees by the pound nor nuclei ONLY with high priced breeding queens.

**HERMAN McCONNELL, ROBINSON, ILLINOIS**

## 3-BANDED Highest Quality of Italian Queens GOLDEN

*Twenty-five years of Select Breeding from the Best*

After 25 years of select breeding, not all of the time in a commercial way, but as large honey producers, therefore rearing a great number of queens for our own use, we have strains of pure Italian bees which we believe are unexcelled for honey production, disease-resisting qualities, beauty, and gentleness. Owning about 1,500 colonies of bees which we run for honey, gives us ample opportunity to test them out in every way. As our apiary interests extend as far north as northern Ontario, we test them not only for honey production but also from a climatic standpoint. We find that our bees stand the long winters there with very satisfactory results. They are very hardy and long-lived. *Listen what others say about them:*

"M. C. Berry & Co., Hayneville, Ala.: The queens I got from you have all the others skinned! They are very gentle, best of workers, and stand the long winters here finely. Other queens coming from a shorter distance do not hold a candle to them."—Gilbert Plains, Man., Canada. (Name on request.)

"M. C. Berry & Co.: I wish to inform you that one of your queens made the most honey of any in the yard. It made 250 pounds honey against an average of 103 pounds for the yard. All of your queens made good. I never have had a queen from you that did not return a big per cent on the investment."—Marion, Ind. (Name on request.)

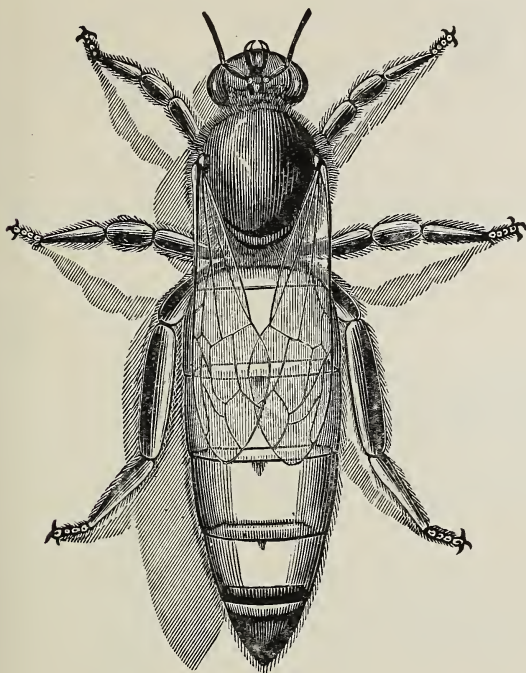
"M. C. Berry & Co.: One of your queens built up from a nucleus and made 360 pounds of surplus honey. Enclosed find \$75.00 for 50 queens. I want these for requeening European foul brood colonies as I find your stock resistant."—Troy, Pa. (Name on request.)

### PRICE LIST OF OUR QUEENS.

Untested .....	\$1.10 ea.;	6 to 50, \$1.00 ea.;	50 to 100 and up, \$0.90 ea.
Select Untested .....	1.25 ea.;	6 to 50, 1.10 ea.;	50 to 100 and up, 1.00 ea.
Tested .....	2.25 ea.;	6 to 50, 2.10 ea.;	50 to 100 and up, 2.00 ea.
Select Tested .....	2.50 ea.;	6 to 50, 2.35 ea.;	50 to 100 and up, 2.25 ea.
Breeders .....	\$25.00 to \$35.00 each.		

Queens' wings clipped free of charge. Safe arrival and satisfaction guaranteed.

**M. C. BERRY & CO., HAYNEVILLE, ALABAMA, U. S. A.**



From the finest stock possible.  
Bred by most skillful  
queen-breeders.

Highest Quality  
Prompt Service  
Satisfaction

## Our Reliable Three-Banded Italian Queens

NOTICE, MR. BEEKEEPERS!—Queens are off. Now is your time for business. Times are getting back to normal. Let us figure with you on your needs. We now have a large stock of queens, and we positively guarantee that no better can be found in U. S. A. We spare neither labor nor money in rearing them. When you buy queens from us and after arrival you examine them carefully, we trust to your judgment and if you don't think they are all we claim them to be, return them to us and we will return your money. That is not all we have to say. After you have introduced them to your colonies and they don't prove to your satisfaction and are not what you expected them to be, just call on us and we will send more to take their places or return the money. We do not want your money unless you are positively pleased. Why we say this about our queens is because we know that queens of the highest quality obtainable are what you want and you will certainly be pleased. It is our aim to rear them to speak to purchaser for themselves, and we feel free for purchaser to be the judge. Please remember the deal is not closed until satisfaction is given. When a fairer deal can be made we will do it. They are bred by the most skillful queen-breeders of long-tested experience, both as honey producers and queen-breeders. The queens are bred from the very finest stock that can be and are mated to only selected drones. Having been carefully bred from grafting until they begin laying, from the very best stock, and mated to selected drones means queens that cannot be excelled, which we guarantee.

### PRICES

	1	6	12	100
Untested .....	1.00	\$5.00	\$ 9.00	\$70.00
Select Untested .....	1.15	6.00	10.50	76.50
Tested .....	2.00	10.00	18.00	
Select Tested .....	3.00	12.00	20.00	

Write for prices on larger quantities.

THE FARMER APIARIES, RAMER, ALABAMA

"Where the good queens come from."





How about pails and cans, shipping cases and cartons? We can supply you promptly.

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Shipments by MAIL, EXPRESS, OR FREIGHT. Write us for quotations.

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## The Good Old Summer Time Is With Us Again

R U going to make that crop of honey the biggest ever? Let us help you.

ORDER NOW

F. A. SALISBURY

1631 West Genesee Street  
SYRACUSE, N. Y.

*New York State Beekeepers, send for our catalog.*

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You want something in our line AT ONCE. Send in your order; we will do our best to meet your requirements.



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We are here to give you the best in QUALITY, SERVICE, and SATISFACTION.

# *Low Prices Again*

*---and the stage all set  
for a big honey season*

*40 per cent off on frames  
35 per cent off on hives  
and the general line sec-  
tions and cases.*

*And on all Quality Goods,  
which we can send to you  
immediately.*

*Get our prices before ordering, for  
When We Cut, We Cut*

*The A. I. Company of Iowa*  
*Council Bluffs, Iowa*



(Continued from page 405.)

form in which it is taken from the hive, wax and honey being intermingled.

Practically all of the honey now produced in California is extracted honey. In 1916, 81 per cent of the California commercial production was sold in such form. In 1917, 82 per cent; in 1918, 90 per cent; in 1919, 97 per cent, and in 1920, 96 per cent. In the United States approximately 55 to 60 per cent of all honey produced is sold as extracted honey. Comb honey is relatively unimportant in California, production of such honey in 1920 amounting to only 2 per cent of the total amount of honey produced in the State. This is the result of the gradual change to extracted honey, as in 1916 approximately 18 per cent of California honey was sold as comb honey.

The production of comb honey is exceptionally difficult and its lasting qualities are such that it is hard to market comb honey outside of the state in which it is produced. As a consequence, the bulk of the comb honey sold in the United States is that produced and sold locally in various eastern States. In 1916 and 1917, 38 per cent of all the honey produced in the United States was produced in the form of comb honey. In 1918 the percentage was 31 per cent, and in 1919 and 1920, 30.5 per cent.

Approximately 10 per cent of the honey produced in the United States is sold as chunk honey. In California only one to two per cent of all honey produced is sold in this form.

The principal markets for honey moving thru the regular channels of trade are reported as Medina, Ohio; Cincinnati, New York City, Chicago, Kansas City, Philadelphia, and Boston. It is estimated, however, that approximately 90 per cent of the honey produced in the country, with the exception of the California production, does not get twenty miles from the home of the honey producer.

In the past the markets for commercially produced honey have been, to a great extent, foreign markets. In 1919 there were 9,105,362 pounds of honey exported from the United States. The principal importing countries were the United Kingdom, which imported 2,882,951 pounds; France, which imported 1,129,704 pounds; Sweden, which imported 1,128,152 pounds; Belgium, which imported 922,008 pounds; the Netherlands, which imported 690,595 pounds; Denmark, which imported 417,492 pounds, and Canada, which imported 297,414 pounds. While these exportations to foreign countries during 1919 were slightly larger than normal exportations, because of the sugar shortage, they may nevertheless be taken as indicative of the proportion of American produced honey formerly absorbed by foreign markets.

At present, these markets are being definitely closed to United States honey producers. In 1920 there were only 1,539,725 pounds of honey exported from the United States of America, almost 50 per cent less than total exportations to Great Britain during 1919 and approximately 83 per cent less than total exportations during 1919.

Several factors are closing these foreign markets to American honey producers. The first of these is the depreciation in foreign exchanges, which is making it exceptionally difficult for foreign countries to purchase American produced goods. This situation may be only temporary and the organization of the new \$100,000,000 Foreign Trade Financing Corporation may materially assist in stabilizing exchanges.

The other factor which is closing foreign markets to American productions is probably permanent. Thruout the world, companies are being formed to further honey production. Cheap labor costs and inferior methods in handling honey will probably assure these corporations a comparative monopoly on foreign honey markets.

The situation is made doubly serious by the fact that many of these companies are formed with the express purpose of exploiting United States markets. They are shipping quantities of extracted honey into the New York market. This honey, it is alleged, is sometimes shipped into the United States in containers, consisting of previously used casks, barrels, and even five-gallon oil cans. This imported honey is not produced under sanitary conditions and may even contain bacilli larvae, which are germs of a very contagious disease, similar to the boll weevil in the cotton industry. Con-

sequently, efforts are being made to secure an emergency protective tariff of not less than 5 cents per pound upon every pound of honey imported into the United States from foreign markets. The purpose of this tariff is not only to protect United States honey from competition with foreign honey, but is also to protect the honey industry from possible inroads which these larvae might make upon the bee of the United States, if importation is permitted to continue. A movement to require rigid inspection of imported honey and rejection of any honey containing injurious larvae could do much to correct this evil, but present attempts by producers seem to be directed toward efforts to secure tariff protection.

The United States honey industry is today definitely faced with the fact that it must rely almost entirely upon domestic markets in the future. In the past it has been the custom to market domestically produced honey in five-gallon cans, containing sixty pounds of extracted honey. As a general rule, two of these cans form a case. A considerable proportion of this honey was retailed direct from the can into containers belonging to the consumer.

The baking trade in the United States has used large proportions of the United States produced honey in preference to sugar, because it permits the holding of a certain proportion of moisture in baked goods. As commercial baked goods tend to dry and chip if sugar is used, honey is considered superior for sweetening purposes.

In order to better exploit local markets a new means of marketing honey is fast gaining in favor in the United States and is being pushed by co-operative honey associations in California. Honey is being put up for the retail trade in one pound, two and a half pound, five-pound, and ten-pound friction-top cans, and in eight-ounce and sixteen-ounce glasses. These containers carry a label showing the name of the canning company and the source of the honey, so that its cleanliness can be vouched for. Active steps are being taken to develop larger home markets for this new form of honey. The food value of honey is unquestioned as it contains 1485 heat calories per pound.

High railroad freight rates are interfering with the marketing of California produced honey, and active steps are being taken to secure a reduction in these rates, so that California honey can enter the eastern markets of the United States. With the development of water transportation, thru the Panama Canal it is anticipated that increasing amounts of California honey can enter eastern markets at cheaper transportation costs. It is being found that co-operative marketing of honey, as at present carried on in California, is reducing the cost of marketing honey by several cents per pound, thereby assisting in profitable marketing. The California Honey Producers' Co-operative Exchange, with head offices in Los Angeles, markets the honey of approximately 85 per cent of the California commercial producers.

The problems which the honey industry of the United States, and particularly of California, are facing today are, therefore, three-fold. The first is the securing of an effective means of excluding any infected foreign honey, the second is a reduction in freight rates to eastern markets, the third is the preparation of honey in more marketable forms and the development of larger consumption in the United States. The first of these problems will require Congressional action. The solution of the second will be made easier thru the development of water transportation thru the Panama Canal, and the ready response which is being made in retail markets to the new forms of marketing honey will go a long way in solving the third problem.

Honey prices have dropped materially in the past year, because of general readjustment and because of the closing of foreign markets. While in 1918 and 1919 and the earlier part of 1920 the prices for the better grades of California honey in Los Angeles markets ranged between 18 and 23 cents, these prices have now dropped to as low as 12 and 13 cents. Predictions as to future honey prices cannot be made with any accuracy today, but indications are that with the developments of new domestic markets the excess honey formerly shipped to foreign markets will tend to be absorbed in the United States.

Michigan Tradesman.

E. H. Tucker.

# 40 PER CENT DISCOUNT

## ON PRICES OF

### ROOT QUALITY BEES AND QUEENS

The kind that is better. Over fifty years' experience in raising bees and queens. Thousands of satisfied customers in every part of the globe are using our bees.

## ROOT QUALITY QUEENS

Now is your opportunity to requeen your colonies with the famous Root Quality Three-Banded Leather-colored Italian Queens at a very small expense. No doubt you have been thinking of doing this for some time but you did not feel that you could do so at former prices.

One of the most practical beekeepers that ever lived made the following statement: "Upon no other one thing does the honey part of the apiary depend so much as it does upon the queen."

### DEDUCT 40% FROM THESE PRICES.

July-Oct.



Untested queens .....	\$2.00
Selected untested .....	2.50

### Our Guarantee on Queens.

We guarantee safe arrival of queens sent in mailing cages. We agree to replace the queen if the one first sent arrives dead or is so feeble that she dies before she can be introduced, provided the beekeeper receiving the dead or unfit queen returns her at once and in her own shipping cage. This guarantee applies only on queens sent to customers in U. S. and Canada.

## ROOT QUALITY BEES

There is a growing demand for bees in modern up-to-date hives. To meet this demand we are prepared to furnish full colonies of bees on Hoffman frames, wired, with combs drawn from full sheets worker foundation in new single-walled 8-or 10-frame hives and double-walled Buckeye hives.

### DEDUCT 40% FROM THESE PRICES.

	Wt.	July-Oct.
Colony in new 1-story 8-frame hive .....	55-65 lbs.	\$18.50
Colony in new 1-story 10-frame hive .....	65-75 lbs.	20.00
Colony in new 1-story Buckeye hive .....	75-85 lbs.	22.50

No queens furnished at the above prices. If queen is wanted, make a selection and add her price to the above.

### NUCLEI.

Our nuclei are shipped by express in light wooden boxes with wire screen top and bottom. It is necessary to have on hand hives into which to transfer the nuclei on arrival and then add frames containing full sheets of foundation to the nuclei as they increase in strength.

### DEDUCT 40% FROM THESE PRICES.

	Wt.	July-Oct.
1-frame Nucleus without queen .....	4- 7 lbs.	\$3.50
2-frame Nucleus without queen .....	9-12 lbs.	5.50
3-frame Nucleus without queen .....	12-16 lbs.	7.50
5-frame Nucleus without queen .....	22-27 lbs.	10.50

### DEDUCT 40% FROM THESE PRICES.

	Wt.	July-Sept.
1-lb. package of bees without combs .....	3 lbs.	\$3.50
2-lb. package of bees without combs .....	5 lbs.	5.50
3-lb. package of bees without combs .....	7 lbs.	7.50

No queen is supplied at these prices. If queen is wanted, make a selection and add her price to the above.

NOTE:—No one should buy bees in pound packages unless he has hives with combs or frames with full sheets of foundation in readiness.

**THE A. I. ROOT COMPANY, MEDINA, OHIO**  
WEST SIDE STATION



# HONEY

## TURN IT INTO MONEY

ALL SWEETS HAVE EXPERIENCED  
SENSATIONAL DECLINES.

THE WORLD'S SUPPLY OF SUGAR IS  
ESTIMATED AT 1,250,000 TONS IN  
EXCESS OF REQUIREMENTS.

VERMONT MAPLE SYRUP IS ONE-  
HALF OF THE 1920 PRICE.

IF YOU HAVE HONEY SELL IT EARLY.  
IF YOU CANNOT SELL IT, WE CAN.

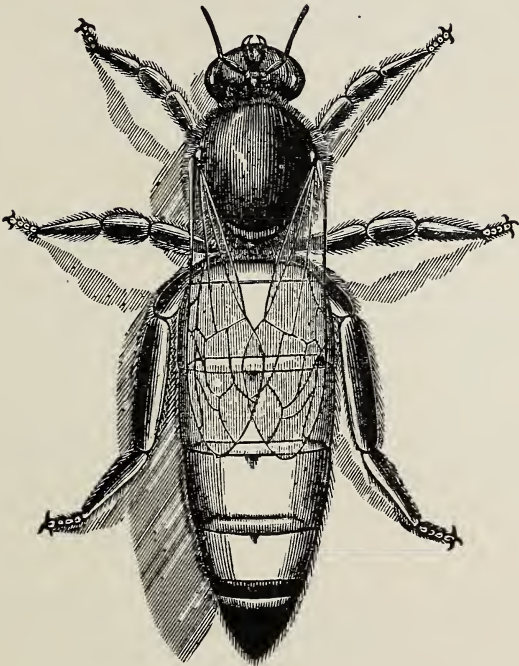


MONEY FOR HONEY



**PATON & COWELL**  
217 BROADWAY  
NEW YORK

# The Queen of Queens



Bred from the best of breeding queens—selected Root home-bred breeders. Reared in the Sunny South, hardy and prolific. Southland queens will keep the hive overflowing with bees. It takes two brood-chambers to house a Southland Queen, and her followers.

## QUEENS

(After July 1st.)

Day-old virgins .....	\$1.00 ea.
100 or more .....	.50 ea.
Untested .....	1.25 ea.
25 or more .....	1.00 ea.
100 or more .....	.75 ea.
Tested .....	2.25 ea.
25 or more .....	2.00 ea.

## NUCLEI

Two-frame nucleus, no queen.....	\$4.50
Three-frame nucleus, no queen....	6.00

## PACKAGES

(Shipped on comb of foundation)

1-pound package bees.....	\$3.00 ea.
2-pound package bees.....	5.00 ea.
3-pound package bees.....	7.00 ea.
25 or more either size, 25c less per lb.	each package.

## SPECIALS

1-fr. brood and pound bees with un-	
tested queen .....	\$4.50
2-fr. nucleus with young tested	
queen .....	6.50

Special attention to large orders and contracts. Get our bids on queens for your apiary. Health certificate with each shipment.

THE SOUTHLAND APIARIES  
W. S. TATUM, PROP. BOX 585, HATTIESBURG, MISS.



# ITALIAN BEES AND QUEENS

## GOING BACK TO NORMAL

Our "motto" is to give the beekeeper the very highest quality Italian Queens, Bees, and Beekeepers' Supplies at the lowest cost possible. Conditions make the following low prices possible. An absolute quality guarantee on everything we sell. Our intention and desire are to stay in the business, and to stay we have got to give you quality goods, therefore, you run no quality risk in ordering from us.

o o o

## QUEENS AND BEES.

After June 15th: Untested Queens, \$1.00 each; 12 or more, 75 cents each. Tested, \$2.00. Breeders, \$5.00 [to \$25.00. Package Bees shipped from Mayhew, Miss., or Helena, Ga.: 1-lb package, \$2.00; 2-lb. package, \$3.75; 3-lb. package, \$5.25. One, two, and three-frame nuclei at the above prices. Add price of queen wanted.

o o o

During May we reared 3496 queens. To date we have had only three complaints which were adjusted at once. Safe arrival and satisfaction guaranteed.

o o o

THE STOVER APIARIES, MAYHEW, MISS.

# ROOT'S DISCOUNT SALE

Based on present prospective raw material cost and wage reduction, The A. I. Root Company has reduced bee supply prices to help get the nation's business "back to normal" as promised on page 2 of our 1921 spring catalog.



*Discounts now in effect are as follows:*

## 40 Per Cent

FRAMES (all styles K. D.)  
BEES: Full Colonies, Nuclei,  
and Pound Packages

UNTESTED QUEENS  
SEL. UNTESTED QUEENS  
CARTONS (For comb honey)

## 35 Per Cent

SECTIONS  
SHIPPING CASES

## 25 Per Cent

HIVES (flat)  
INSIDE FURNITURE  
HONEY-BOARDS  
CAGES, BEGINNERS'  
OUTFITS

## 10 Per Cent

HONEY and WAX  
EXTRACTORS  
SMOKERS  
KNIVES, TRAPS  
METAL GOODS

AIRCO COMB FOUNDATION is reduced 10 cents per pound.



Write at once for Catalog, Bargain List, and Discount folder if you have not received them. Now is the time to complete your equipment--extractors, honey-boards, traps, smokers and veils, bees and queens.

Supplies ready at hand--Foundation, sections, cartons, shipping cases, glass and tin containers, will save time which may be used in producing more honey.

*No discount on Buckeye hives, books, tin or sundry unnamed items. These discounts have no relation whatever to any price quoted in our close-out lists or elsewhere. They apply only to our regular 1921 catalog--114th edition.*

## THE A. I. ROOT COMPANY, MEDINA, OHIO

New York, Chicago, Philadelphia, Norfolk, St. Paul, Indianapolis, New Orleans



# LOWER PRICES

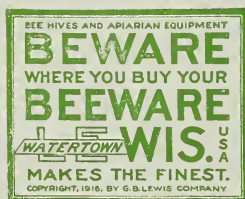
Did you get our announcement mailed to our list in June of new, low, retail prices on "Beeware" effective at once? If not, write us. Our catalog is free. There is a distributor near you. "Beeware" quality is the same.

## BARGAIN LIST

Write for our bargain list. There are dozens of good bargains in it. We will send it free upon request. A few of the 95 good buys are listed below. F. O. B. Watertown:

8 and 10-fr. wood and zinc excl., old style at 50c each  
30G frame wire, 335-ft. spools at..... 6c each  
Black bristle bee-brushes at..... 15c each  
Pepper box bee-feeders, pint size at..... 5c each  
Lewis section formers at.....90c each  
Boardman feeders, old style, K. D., .....15c each  
Colorado section-presses, at.....57c each  
A lot of No. 2 Lewis sections, odds, at.... \$7 per M.

LOOK  
FOR  
THIS



REGIS-  
TERED  
MARK

## G. B. LEWIS COMPANY

Home Office and Works, Watertown, Wis., U. S. A.

Branches: Memphis, Tenn.; Albany, N. Y.;  
Lawyers (near Lynchburg), Va.

Carlot Distributors Throughout the U. S. A.